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American Foundryman

June
1943

Foundry Industry Has Double Obligation

WE ARE fighting a war, a grim war . . . one which has brought with it very complex problems and influences which have affected not only our actual work of producing castings but also the thinking and planning of our efforts to produce the greatest possible tonnage of castings and to ship them in the shortest space of time to plants where they are needed most.

To look into the future, particularly the coming year, in an attempt to determine what the foundry industry can do to be of the most help in furthering its part in the production of castings needed for weapons of war, we must be guided, in a measure, by the past war years. By this gauge, it seems as though problems which the industry has never encountered will continue to arise, and the pattern appears to be one of continuous change.

Although the general picture is complex, it seems to me that the work of our industry and A.F.A. is clear cut, and that it can be stated in simple words. The basic problem is to use the information which has been gathered for the technical and mechanical improvement of our product, to keep quality at the highest standard, and to continue the accumulation of such information through cooperation with each other and with the industry as a whole, so that we may serve our government and meet its requirements by continuing to produce a product of which we are and can be very proud. It seems to me to be as simple as that.

I must commend and congratulate those who have led A.F.A. during the past year on the work they have done. They have carried on in the face of great difficulties and have shown us the way. We must carry on and bring the industry to an even higher level. However, to do this, it means that we all must work as a unit for the industry through the A.F.A. As individuals, we have the greatest opportunity to cooperate and work with those organizations which are striving so hard to carry on the continued building of the foundry industry.

We have every reason to be proud of the participation of our industry in the war effort. However, we also must look forward to the period when this war ends, and it seems to me that industry has a big responsibility in looking forward to that time. Ours is one of the heavy industries. With production at its present height there must necessarily be a drastic drop.

I believe that we have a task before us, namely, to acquaint the public with what the foundry industry is doing to keep tonnage rolling to meet the requirements of the armed forces, and yet contribute its manpower to them as they require it. We should take the public into our confidence regarding our plans to cushion the shock of reduced production and, consequently, fewer jobs.

We have a story to tell. We are all planning to do our best for those men who have been our employees and will be coming back. We must begin to face these facts. While we will do everything possible, unless we tell the people of this country the facts of what we know will be facing us, we will not be meeting our obligation. To tell our story properly requires the heartiest cooperation both nationally and in our local communities.

L. C. WILSON, President,
American Foundrymen's Association

American Foundryman

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American Chain & Cable Co., Inc.,
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HEADQUARTERS, Room 1398, 222 West Adams St., Chicago, Ill.

CONTENTS

JUNE, 1943
VOL. 5 — NO. 6

	Page
Foundry Industry Has Double Obligation, *By L. C. Wilson*	Inside Front Cover
2000 Foundrymen Find Answers to Many Wartime Problems at St. Louis Congress	2
A.F.A. President Clarifies Work and Scope of Association in Annual Address, *By D. P. Forbes*	9
W.P.B. Simplifies Procedure for Obtaining Aluminum for Patterns	12
Wisconsin Survey Shows Foundry Jobs Women Hold, Problems of Employment, *By Dr. Paul A. Brehm*	13
Entries in A.F.A. Apprentice Contest Draw Crowds at St. Louis	18
Gray Iron, Magnesium Papers Win A.F.A. Student Essay Contest	19
New Members of A.F.A.	21
Government Orders of the Day for Industry	23
Chapter Activities	24
Abstracts of Current Foundry Literature	31
June Chapter Meeting Schedule	33

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2,000 Foundrymen Find Answers to Many Wartime Problems at St. Louis Congress

WITH a record attendance of nearly 2,000 A.F.A. members and guests registered, marking the largest attendance at any A.F.A. annual meeting ever held without an exhibit, the 2nd War Production Foundry Congress, held in St. Louis April 28-30, likewise goes down in the books as one of the most valuable in the history of the Association.

Undoubtedly, no previous convention, even the 1942 War Production Congress, was ever held at a more significant time. The attendance in St. Louis amply proves the eagerness of foundrymen for information on the production of their metals and products—in many cases, metals and products they were not producing prior to conversion for war production.

Foundrymen in New Fields

For example, many foundrymen who formerly made gray iron castings today are producing steel castings. Likewise, many non-ferrous founders have converted to production of the light metals, magnesium and aluminum, because of the tremendous wartime demands in those fields. The high type of product required for war needs has made it imperative for these foundrymen to become quickly familiar with an unfamiliar field, and to turn out quality products almost "from scratch."

In all probability, this accounts for the large attendance at the technical sessions, which was as large as or larger than attendance in any previous year. Even the night sessions of this streamlined 3-day meeting, often lasting past 11:00 p.m., were remarkably well attended and received with close attention.

These technical meetings were splendidly conducted by the various Chairmen, with the result that a great amount of floor discussion was developed. Excellent cooperation and arrangements on the part of the St. Louis District Chapter and its convention committees added materially to the smoothness of the entire program.

Of equal importance were the personal discussions that such a Congress makes possible . . . off-the-record conversations and sessions such as the round-table meetings and shop operation courses. The convention proved notably educational not only for management and technical men but also, through the several shop courses, for the men in the shops. Thus the 2nd War Production Foundry Congress achieved "vertical coverage" of the entire foundry supervisory personnel.

The results of this convention, the valuable information that members and guests carried home with them, will become increasingly important throughout the entire war period. Necessarily, too, the vast number and complexity of war problems automatically will increase the problems associated with the post-war foundry industry. To many foundrymen the Congress offered practical data for the solution of highly practical and immediate problems.

Official Opening Session

This War Production Congress was officially opened Wednesday morning by A.F.A. President Duncan P. Forbes, Gunite Foundries, Inc., Rockford, Ill. In welcoming the foundrymen

Nearly 700 A.F.A. members and guests gathered in the Gold Room of the Jefferson Hotel on Friday evening, April 30, for the Annual A.F.A. Dinner, climaxing the 2nd War Production Foundry Congress in St. Louis. Speakers at the dinner were Hon. Dwight P. Griswold, Governor of Nebraska, and Lt. Col. Jos. M. Colby, Ordnance Dept., U.S.A.

to St. Louis, C. B. Shanley, Semi-Steel Castings Co., and Chairman of the St. Louis District Chapter, called attention to the fact that this was the first A.F.A. convention ever held in St. Louis, and the first to be staged west of the Mississippi River.

I.B.F. Sends Greetings

Frank G. Steinebach, *The Foundry*, Cleveland, then read a cablegram of greeting from the Institute of British Foundrymen, as follows: "The Institute of British Foundrymen send cordial greetings and best wishes for success of St. Louis Convention and reaffirm their confidence in final victory through our united endeavors." Secretary R. E. Kennedy was instructed to acknowledge this message with a cablegram reading: "The American Foundrymen's Association, in convention assembled, expresses appreciation for the kind message that we again restate our belief in ultimate, complete victory through our united efforts."

Col. Davis Addresses Meeting

President Forbes then introduced Col. Merle H. Davis, Chief of St. Louis Ordnance District, who addressed the Congress on "Trends in the Use of Castings for Ordnance Items." Col. Davis traced our all-out Ordnance effort back to 1941 and, in referring to what has been accomplished since, stated: "In every field of Ordnance production today we are getting off a given line, production such as no one ever visualized."

He called attention to the growing shortages of strategic raw materials and the resulting scramble for substitutes with constant shifting from one new material to another. On the manpower question he expressed admiration for the way the metal-working industries are meeting the challenge. "Even the foundry industry," he declared, "is using women and old men, and the country as a whole will gain from the resourcefulness which women, old men and physically handicapped are showing."

The problem of overall efficiency in Ordnance operation, he said, is this: "If we can produce our Ordnance with greater ease than formerly, or with greater ease than our enemies, with less waste motion or from less costly materials, and still meet those stringent requirements of your son and my son on the battlefield, we shall be making a continuing contribution to winning the war."

At the Opening Session of the St. Louis Foundry Congress, Col. Merle H. Davis (inset), Chief of the St. Louis Ordnance District, delivered the keynote address. Speaking on "Trends in the Use of Castings in Ordnance Items," he called upon the assembled foundrymen to surpass even the splendid record made by the industry to date in supplying our armed forces.

Why Our Medium Tank Is Called a "Cast Job"

MEDIUM TANK M4 WITH CAST ARMOR HULL
TOTAL WEIGHT - 60,000 LBS
STEEL CASTINGS 9,000 LBS. 15%
MALLEABLE 1,000 LBS. 1.6%
NON FERROUS 1,500 LBS. 2.5%
CAST ARMOR 20,000 LBS. 33.3%
OTHER COMPONENTS 28,500 LBS. 47.5%

The above chart was presented by Col. Merle H. Davis, Chief of St. Louis Ordnance District, at the St. Louis Congress, to show how foundry products represent more than one-half (52.5 per cent) of the total weight of the famous M-4 "General Sherman tank with cast armor hull. In this 60,000 lb. tank, called "Queen of the Battlefields," cast armor accounts for 20,000 lbs. or 33.3 per cent; steel castings other than armor, 9,000 lb. or 15.0 per cent; non-ferrous castings 1,500 lb. or 2.5 per cent; and malleable castings 1,000 lb. or 1.6 per cent.

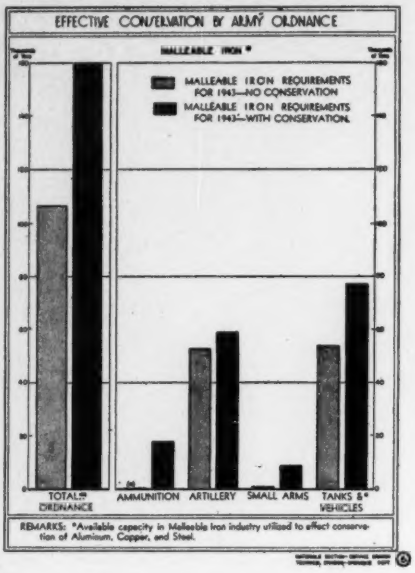
Col. Davis, speaking of ordnance designs of a few years back, said that "It was probably the lack of inspection procedures and technique in which we could place full confidence that retarded our more general use of castings." Today, however, "There is a constant search for opportunities to eliminate parts which must be fabricated by conventional machine tools."

"Thus stampings share with castings huge savings in fabrication. There have been important technical advances in heat treatment; and in the manufacture of repetitive foundry items there have been steel mill tricks for assuring a continuous supply of hot metal, such as triplex melting, and men of the foundry industry have made outstanding contributions to Ordnance."

In conclusion, Col. Davis offered "the contention that at the end of this long-drawn-out war, the Foundry Industry can say to Army Ordnance: 'You have left us in better shape than you found us. We have gained, as Army Ordnance has, from our close association.'"

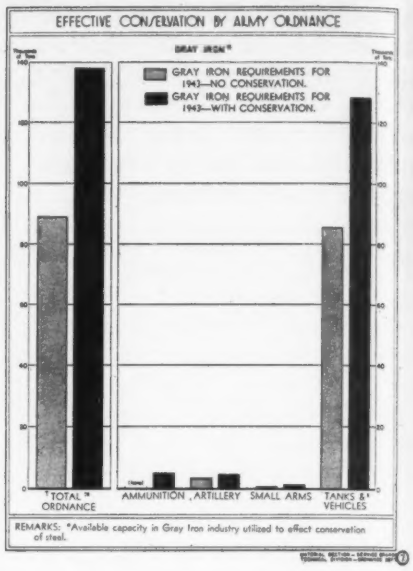
Business and Awards Meeting

President Forbes convened the Annual Business and Awards meeting the morning of April 29


EFFECTIVE CONSERVATION BY ARMY ORDNANCE
MALLEABLE IRON *
MALLEABLE IRON REQUIREMENTS FOR 1943—NO CONSERVATION
MALLEABLE IRON REQUIREMENTS FOR 1943—WITH CONSERVATION
TOTAL* ORDNANCE
AMMUNITION
ARTILLERY
SMALL ARMS
TANKS & * VEHICLES
REMARKS: *Available capacity in Malleable Iron industry utilized to effect conservation of Aluminum, Copper, and Steel.

Castings Tonnages for Ordnance Work Increased Through Conservation

Charts presented at the Opening Session of the recent Foundry Congress by Col. Merle H. Davis, Chief, St. Louis Ordnance District, to show probable increased consumption of Malleable Iron and Gray Iron castings as the result of their substitution for other critical materials in ordnance work.


EFFECTIVE CONSERVATION BY ARMY ORDNANCE
GRAY IRON *
GRAY IRON REQUIREMENTS FOR 1943—NO CONSERVATION.
GRAY IRON REQUIREMENTS FOR 1943—WITH CONSERVATION.
TOTAL * ORDNANCE
AMMUNITION
ARTILLERY
SMALL ARMS
TANKS & * VEHICLES
REMARKS: *Available capacity in Gray Iron industry utilized to effect conservation of steel.

In the chart at the left, comparing Malleable Iron ordnance requirements for 1943, shaded bars indicate estimated normal consumption for ordnance work without conservation. The black bars show probable Malleable consumption for ordnance items due to substitutions, estimated at 160,000 tons total. The use of Malleable is fairly evenly distributed over all types of ordnance, the largest per cent of increase being shown in Ammunition.

The chart at the right tells a similar story for Gray Iron in ordnance work, indicating probable tonnages nearly double normal employment. As the black bars show, by far the greatest percentage of this estimated increased use of Gray Iron castings is in the field of tanks and other automotive equipment for our armed forces.

and called on Executive Vice-President C. E. Westover for a brief report. Mr. Westover stated that membership in the Association today has made an all-high record, and pointed out that full reports of Association activities would be made at the close of the fiscal year, ending June 30.

R. E. Kennedy, National Secretary of A.F.A., then presented the report of the Nominating Committee, presenting the names of new officers and directors of the Association duly elected in accordance with the by-laws of the Association. "Accordingly," he said, "I have cast a unanimous ballot of the membership for the election of these men," each of whom was then introduced:

New Officers and Directors

President, L. C. Wilson, Reading Steel Casting Div., American Chain & Cable Co., Inc., Reading, Pa.

Vice-President, R. J. Teetor, Cadillac Malleable Iron Co., Cadillac, Mich.

Directors (to serve 3-year terms):

Roy M. Jacobs, Standard Brass Works, Milwaukee, Wis.

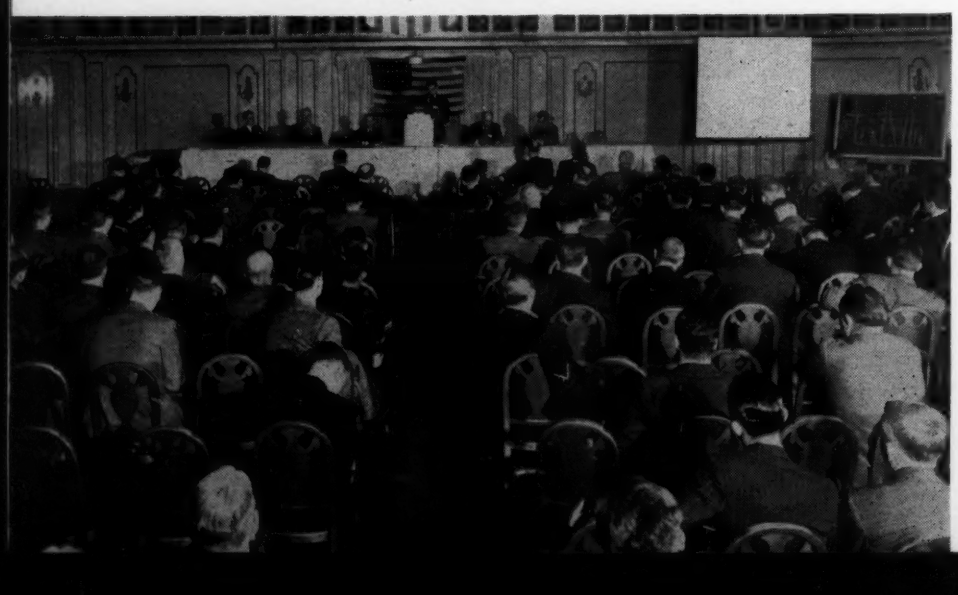
Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va.

Harry Reitinger, United States Pipe & Foundry Co., Burlington, N. J.

Wm. B. Wallis, Pittsburgh Lectromelt Furnace Corp., Pittsburgh, Pa.

Duncan P. Forbes, Gunite Foundries, Inc., Rockford, Ill., as retiring President of A.F.A.

One of the most important sessions held during the Congress was the Aluminum and Magnesium meeting on April 30, presided over by Dr. N. E. Woldman, Eclipse Aviation Div. of Bendix Aviation Corp., Bendix, N. J. This was the first convention at which the newly formed A.F.A. Aluminum and Magnesium Division had its own program, and results were pronounced highly successful and informative.



Executive Committee Elected

The newly elected officers of the Association took office at a meeting of the Board of Directors held on Friday, April 30, in St. Louis. With newly elected President L. C. Wilson presiding, the following were elected members of the Executive Committee, in addition to President Wilson:

Vice-President R. J. Teetor, Cadillac Malleable Iron Co., Cadillac, Mich.

(Photo courtesy R. H. Jacoby, Key Co.)
John Bolton, The Lunkenheimer Co., Cincinnati, delivering the first A.F.A. Foundation Lecture at the Business and Awards Meeting in St. Louis, April 29. His splendid paper on "Foundry Metallurgy and the Castings Industry," was considered one of the main highlights of the entire meeting.

(Photo courtesy R. H. Jacoby, Key Co.)
W. G. Reichert, Reichert Engineering Co., Newark, N. J., conducting the excellent symposium on Heading and Gating Castings during the recent convention.

(Photo courtesy R. H. Jacoby, Key Co.)
A.F.A. President Duncan P. Forbes, Gunite Foundries, Inc., Rockford, Ill., caught in a jovial mood while presiding at the Business and Awards Meeting, April 29 in St. Louis.

Director R. J. Allen, Worthington Pump & Machinery Corp., Harrison, N. J.

Director S. V. Wood, Minneapolis Electric Steel Castings Co., Minneapolis, Minn.

Director and Past-President D. P. Forbes, Gunite Foundries Corp., Rockford, Ill.

Director Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va.

All elections of officers to the Headquarters Staff of theAssociation were postponed until the Board of Directors meeting to be held in July.

1944 Nominating Committee

Following these introductions, the report of the Pre-Nominating Committee was presented by Chairman C. V. Nass, Pettibone Mulliken Co., Chicago, other members of the committee being H. W. Dietert, Harry W. Dietert Co., Detroit, and H. A. Deane, American Brake Shoe & Foundry Co., New York. The Pre-Nominating Committee presented the names of four candidates for election to the 1944 Nominating Committee, as required by the by-laws, to serve with the three immediate past-Presidents of the Association.

The three past-Presidents thus designated, and the four members thus elected at the Congress, are as follows:

Chairman, L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala.

H. S. Simpson, National Engineering Co., Chicago.

D. P. Forbes, Gunite Foundries, Inc., Rockford, Ill.

Elected Members and Alternates:

L. C. Farquhar, American Steel Foundries, Granite City, Ill.

(Alternate) C. P. Wright, American Brake Shoe & Foundry Co., Chicago.

J. H. Lansing, Malleable Founders' Society, Cleveland.

(Alternate) L. E. Roby, Peoria Malleable Casting Co., Peoria, Ill.

Wm. Romanoff, H. Kramer & Co., Chicago.

(Alternate) A. E. Jacobson, Grand Haven Brass Foundry, Grand Haven, Mich.

F. G. Sefing, International Nickel Co., New York.

(Alternate) W. A. Hambley, Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Apprentice Contests

Report on the National A.F.A. Apprentice Contests was submitted by N. F. Hindle, Assistant Secretary of A.F.A., who called attention to the purpose of the contests, the manner in which they are conducted, and the growing interest they have

Some of the large group that attended the Steel sessions held on Thursday and Friday, April 29 and 30, at St. Louis. Few meetings during the Congress were better attended or brought forth so much material of interest to those present.

(Photo courtesy R. H. Jacoby, Key Co.)
S. W. Brinson (right), Norfolk Navy Yard, Portsmouth, Va., receiving from Past President H. S. Simpson, National Engineering Co., Chicago, an Honorary Life Membership in A.F.A., during the 1943 Congress.

induced throughout the industry. Winners in the four contests held this year (Gray Iron, Steel, Non-Ferrous, and Patternmaking) are shown on pages 18 and 19 of this issue.

Student Essay Contest

Fred G. Sefing, International Nickel Co., then announced the names of winners in the 1943 Student Essay Contest sponsored by A.F.A. through the Committee on Cooperation with Engineering Schools, of which Mr. Sefing is Chairman. Complete results of this contest also are contained in a separate article on pages 18-19 of this issue of *"American Foundryman."*

Following the awarding of prizes in the essay contest, President Forbes turned the meeting over to Past-President H. S. Simpson, National Engineering Co., Chicago, who personally bestowed on Stanley W. Brinson, Master Molder at the Norfolk Navy Yard, Portsmouth, Va., Honorary Life Membership in the Association, for valuable contributions to the Association and the industry. A second Honorary Life Membership also was presented to President Forbes.

Past President L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala., then was introduced and presented the William H. McFadden Gold Medal of A.F.A. to Carl F. Joseph, Research Metallurgist, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich., "for outstanding metallurgical and shop practice contributions to the Foundry Industry, especially in malleable iron."

A second medal, the John A. Penton Gold Medal of the Association, was presented personally to Rufus F. Harrington, Foundry Superintendent, Hunt-Spiller Mfg. Co., Boston, Mass., for outstanding pioneering work in foundry sand control. This presentation was made by Past President Henry S. Washburn, Plainville Casting Co., Plainville, Conn.

(Photo courtesy R. H. Jacoby, Key Co.)
Past President L. N. Shannon (left), Stockham Pipe Fittings Co., Birmingham, Ala., presenting to C. F. Joseph, Saginaw Malleable Iron Div., Saginaw, Mich., the Wm. H. McFadden Gold Medal of A.F.A.

(Photo courtesy R. H. Jacoby, Key Co.)
Past President H. S. Washburn (left), Plainville Casting Co., Plainville, Conn., presenting to R. F. Harrington, Hunt-Spiller Mfg. Co., Boston, Mass., the John A. Penton Gold Medal of the Association.

First Foundation Lecture

At the conclusion of the awards presentations, President Forbes announced presentation of the 1st A.F.A. Foundation Lecture by John W. Bolton, The Lunkenheimer Co., Cincinnati. Mr. Bolton, A.F.A. Gold Medalist in 1937, long an active member of the Association and internationally known for his contributions to advancement of foundry metallurgy, presented a splendid address on "Foundry Metallurgy and the Castings Industry." Mr. Bolton's subject was exceptionally well covered, and set a high standard for future Foundation lectures.

Women in Industry Meeting

With the question of manpower and training looming large in all industry today, the "Women in Industry" session held Thursday, April 29, proved especially informative. Wm. J.

Many well-known faces in the foundry industry appeared at the luncheon meeting of the Cupola Research Committee, on Wednesday, April 28. Left to right, around the table—(Bottom left) F. J. Walls, International Nickel Co., Detroit; F. G. Sefing, International Nickel Co., New York; C. O. Burgess, Union Carbide & Carbon Research Laboratories, Niagara Falls, N. Y.; H. S. Aufderhaar, Electro Metallurgical Co., Chicago; L. D. McLaren, Republic Coal & Coke Co., Chicago; A. E. Caudle, Allis-Chalmers Mfg. Co., Milwaukee; G. P. Phillips, International Harvester Co., Chicago; V. A. Crosby, Climax Molybdenum Co., Detroit; B. C. O'Brien, Roots-Connersville Blower Co., Connersville, Ind.; H. Kenneth Briggs, Miller & Co., Chicago; V. H. Schnee, Battelle Memorial Institute, Columbus, Ohio; A. E. Schuh, U. S. Pipe & Foundry Co., Burlington, N. J.; T. G. Johnston, Republic Steel Co., Cleveland.

Chairman R. G. McElwee, Vanadium Corp. of America, Detroit; E. E. Marbaker, Mellon Institute, Pittsburgh, Pa.; Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va.; G. S. Evans, Mathieson Alkali Works, New York; J. F. Oesterle, University of Wisconsin, Madison, Wis.; T. E. Eagan, Cooper-Bessemer Corp., Grove City, Pa.; H. W. Stuart, U. S. Pipe & Foundry Co., Burlington, N. J.; K. H. Priestley, Eaton Mfg. Co., Vassar, Mich.; Oscar Woehlke, Grede Foundries, Inc., Milwaukee; John Lowe, Battelle Memorial Institute, Columbus, Ohio; W. J. Grede, Grede Foundries, Inc., Milwaukee; W. W. Rose, Gray Iron Founders' Society, Cleveland.

Hebard, Continental Roll & Steel Foundry Co., East Chicago, Ind., presided at this session and brought forth from the large attendance the fact that employment of women in industry is extremely spotty.

Speaker at this meeting was Miss Sara Southall, supervisor of employment, International Harvester Co., Chicago, who brought out many valuable facts in connection with the large scale employment of women by her company. Following her talk Miss Southall answered a number of specific questions asked from the floor, and in the course of her remarks referred to a recent survey made in Wisconsin foundries on health and safety problems concerning women workers. This report is printed elsewhere in this issue of *"American Foundryman."*

(Photo courtesy Glen England, American Car & Foundry Co.)

Max Kuniansky, Lynchburg Foundry Co., Lynchburg, Va., in characteristic pose, takes part in the discussion from the floor during the important Symposium on Gray Cast Iron as an Engineering Material.

Annual A.F.A. Dinner

As a climax to a successful Congress, nearly 700 attended the Annual A.F.A. Dinner, held at Hotel Jefferson on Friday, April 30 . . . the largest attendance at any annual meeting banquet ever staged by the Association, with the one exception of the Chicago convention in 1940. President D. P. Forbes presided as toastmaster, and after presenting the members and guests at the speaker's table, introduced the guest speakers of the evening.

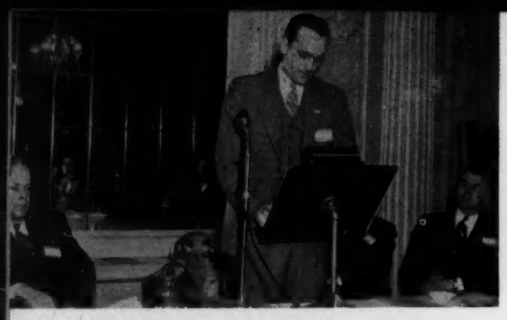
One of the most informative events of the Foundry Congress was the 3-meeting Symposium on Gray Cast Iron as an Engineering Material. Typical of attendance and interest throughout the symposium was this meeting on April 29.

First-hand facts on "The Performance of American Tanks on the Battlefield" were presented by Lt. Col. Joseph M. Colby, Ordnance Department, U.S.A., in charge of the development of automotive equipment for the Ordnance Department and recently returned from North Africa. Colonel Colby recounted some of his experiences in establishing maintenance and repair stations under lend-lease agreements in Africa and the Near East, for which he was decorated by the British government.

He brought out the three essential military characteristics of firepower, mobility and armor protection, and stated that American tanks have all three of these characteristics. American tanks, he declared, have greater fire power, more mobility and more armor protection, all of these with greater reliability, than any other tank of comparable weight in the world.

Several colorful incidents were cited to show how American equipment possesses the three essential mechanical characteristics of reliability, accessibility and simplicity, and has stood up under grueling combat conditions. American tanks in one British armored brigade, in 32 continuous days of combat and with some vehicles going 2200 miles, suffered only 12 mechanical failures. The maintenance unit suporting this brigade in the first week of combat returned to action 48 battle casualties, prompting the commanding officer to state that in all his ex-

Scene at the Brass and Bronze Division meeting, held Thursday, April 29, at the DeSoto Hotel. Interest ran high at this meeting, and strong attendance was characteristic of practically all sessions held during the 3-day streamlined Congress.



(Photo courtesy R. H. Jacoby, Key Co.)
This year's convention session on Safety and Hygiene, held April 30, developed important material, especially in connection with magnesium practice, under chairmanship of Jas. R. Allan (left), International Harvester Co., Chicago. At the speaker's rostrum, R. I. Thrune, Dow Chemical Co., Midland, Mich. Right, Warren A. Cook, Zurich General Accident & Liability Ins. Co., Ltd., Chicago.

(Photo courtesy R. H. Jacoby, Key Co.)
Dr. H. Ries (right), Ithaca, N. Y., snapped in a "corner conversation" with C. P. Albus, Hercules Powder Co., Wilmington, Del., during the St. Louis Congress.

perience as a tank officer this was the first time he had ever gotten a tank back to his command after it had been knocked out during that action.

Colonel Colby showed many slides of Allied and enemy equipment and pointed out how well American equipment has stood up. Particular attention was called to the M-4 "General Sherman" tank with its cast hull, cast front end, cast turret, cast bogie brackets, and cast idler brackets. This tank, the speaker stated, "is pretty much of a cast job."

Gov. Griswold Address

In keeping with the policy of presenting, at each Annual Dinner, an outstanding speaker on other than foundry topics, Hon. Dwight P. Griswold, Governor of Nebraska, in his address on "Industry Fights a War" pointed out that private industry must be an essential factor in any post-war planning. "Our nation must use intelligence," he said, "and I trust that in the future we will make full use of our productive possibilities, rather than spend our time planning limits to be imposed. I hope we will learn that standards of living are increased by turning out more and better goods."

In speaking of post-war possibilities, he stated that "Every element will be present in this country for a tremendous boom. New processes, new devices, new gadgets will be coming onto the market as a result of war development" such as the light metals, plastics and new synthetic products. "While there will be changes in our social, economic and political life, yet we must retain our fundamental concept that each individual is to have some right to make his own decisions and follow his own desires."

On government operation, he said: "I am sure no system of government operation can produce goods and raise living standards as does a system of private industry, but we must see that private industry is prepared to furnish employment to people when this war is over. It requires some planning right now in order to make sure that the ten million men taking off their uniforms and the twenty million men and women coming out of war plants shall have some place to go to work. The leaders of American business are planning now to do this very thing."

I.B.F. Exchange Author Long in Foundry Work

JOHN W. GARDOM, author of the I.B.F. Exchange paper to the A.F.A. Congress at St. Louis, on "The Mass Production of a Manganese Steel Casting," has been engaged in metallurgical work in England since before World War I. His paper was largely based on his experiences in instituting in record time a war program for mass production of armaments, and presented an interesting picture of British wartime foundry operations.

Mr. Gardom began his career as a laboratory assistant at the Manchester College of Technology under the late Sir Harold Carpenter. During World War I he served in the Royal Artillery from 1914 to 1917, then was assigned to metallurgical work at the Royal Aircraft Factory, and later to the Ministry of Supply. After the war he first became connected with Skefko Ball Bearing Co. as assistant metallurgist, and later as chief metallurgist. After three years he joined Bagshawe & Co., manufacturers of conveyors and malleable castings, where he remained until 1933, leaving there as works manager to establish his own business as a consulting engineer specializing in foundry installations. He has since installed many iron, malleable and steel foundries, with specialized machine shop and shot and grit operations.

J. W. Gardom

Mr. Gardom has been active with the Institute of British Foundrymen since 1922, serving as president of the London branch, first chairman of the Malleable Cast Iron Subcommittee of the Technical Committee, and has been chairman of the Technical Committee since 1932. His work in establishing the present setup of the Technical Committee won him the Oliver Stubbs Gold Medal in 1933.

Chairman of the St. Louis District Chapter C. B. Shanley (right), Semi-Steel Casting Co., stops to chat with old friends during the convention. Left, Ed C. Mathis, Pickands Mather & Co., Chicago. Center, G. W. Mitsch, American Car & Foundry Co., St. Louis.

(Photo courtesy Glen England, American Car & Foundry Co.)

A.F.A. President Clarifies Work and Scope of Association in Annual Address

By Duncan P. Forbes,
Gunite Foundries, Inc., Rockford, Ill.
President, American Foundrymen's Association

WE ARE met here for a serious purpose, and I am confident that the time of busy men spent at this Congress will be amply repaid by increased ability of the casting industry to contribute in fuller measure to the war effort.

Before taking up the problems that face our industry, I wish to tell the people of St. Louis how much we appreciate the hospitality of their beautiful city. This meeting marks the first time that any of our annual meetings have been held in a city west of the Mississippi River.

Thanks to St. Louis Chapter

The St. Louis Chapter of the American Foundrymen's Association is to be congratulated on the magnificent preparations made for our stay here. The committees which have planned the activities have done outstanding work and it is almost impossible to mention the names of any few men to whom the credit is due. Therefore, Mr. Shanley, I wish to extend my thanks and those of the American Foundrymen's Association to you who have made this splendid meeting possible.

When our country was attacked without warning on December 7, 1941, our rearmament program was scarcely starting to become effective, and our industry, along with many others, was still struggling with the many problems of conversion from civilian to military production. Because the production of castings is so closely related to the production of the so-called heavy industries, we suffered severely during the depression years. The thousands of foundries producing castings had not the finances with which to keep their plants properly modernized and their equipment in good repair.

Duncan P. Forbes

In one respect only had we advanced and that was in our thinking. During the depression and the recovery years which followed it, the American Foundrymen's Association continued to function at a steadily increasing pace. Our metallurgists, operating men, cost accountants, safety engineers, and scores of others, continued their thinking without abate. The results of their experiments have been reported not only to our national meetings but also to the monthly meetings of our many chapters, with the result that during a period of economic upheaval our industry advanced in mind, if not in body.

I know you will all agree with me that the foundry industry has an outstanding record of conversion to the demands of war. If the American Foundrymen's Association has contributed substantially to this accomplishment, as I am sure it has, then the entire effort that has been expended since our organization began has been returned many fold.

War Is Challenge to A.F.A.

The winning of the war is the prime aim of all of us. Decisions are based not on "Can I make some money by doing this thing," but rather, "Will doing this thing help win the war?"

And the war is far from won. Only within the last few months have we stopped retreating and set about on our first small offensives. Our enemies are ruthless men of no mean ability; we cannot win this war by complacently going about our tasks on a business-as-usual basis. We can win only by mustering every means at our command, so that our plants, our labor and our brains will do a better job than has ever been done before.

The American Foundrymen's Association must answer this challenge and must outdo its previous accomplishments. Our Association must furnish to the men directing our foundries the combined knowledge of our membership, so that each foundry can better do its allotted task.

Foundry Operation More Complex

I need not mention that the efficient operation of a foundry has taken on an exceedingly complex pattern. Even in my lifetime I have seen a revolution in foundry methods. Metallurgical control, production equipment, coremaking, sand testing, cleaning methods—all have been revolutionized, and, while this has resulted in the production of better foundry products at lower costs, infinitely greater mental capacity is required of our present-day foundryman.

Our Association serves as a clearing house of information—a university, if you will . . . for the education of the men who must operate our foundries. It is fortunate indeed that what we learn from our war activities can be subsequently applied for the benefit of civilization when the war is over. We can beat our sword of military effort into the plowshare of better living.

At times we are apt to lose sight of the aims of the American Foundrymen's Association,

and during my term as president I learned that there are a great many different ideas as to what the American Foundrymen's Association should attempt to accomplish. I would like to give you my ideas on this subject, without presuming to dictate the direction which our evolution should take.

Defines Aims of A.F.A.

In the first place, we are an Association of foundrymen, and the word "Association" is bound to carry with it acquaintanceship and cooperation. However, in the broader sense we are a Technical Society; we should aim to advance the methods and ability of our foundries to produce castings for a wide variety of uses. We are interested in developing methods and types of material and in eliminating waste, so that the cost of our product will permit it to reach a wide market and thereby be of greater utility to society.

We are interested in the improvement of the quality of our castings, so that users can rely upon their integrity and also make use of them for purposes which would otherwise be impossible. We are interested in improving the working conditions of our plants, so that we can attract to our ranks young men of calibre to assure a progressive future. We are interested in training as skilled artisans those taking part in our apprentice contests, and we are also interested in the type of university training the young men will receive who are to be our future engineers and metallurgists.

Above all, we are interested in having the users of castings understand their merits and potentialities. In other words, I might say that we are interested in doing everything possible to assure a healthy future for our industry.

Cooperates With Trade Associations

It is not our function, however, to encroach in any respect upon the proper fields of the foundry trade associations. We are fortunate that these associations are growing in strength and effectiveness. It is to our interest as a technical association that the trade associations do a good job in developing sound distribution of our products, just as it is to their interest that our Association continues to foster the ability of their operating men to produce.

I have talked in recent months to many officers and directors of these trade associations and I can assure you that they are all vitally interested in our success. They want our cooperation fully as much as we want theirs.

True, I have found that many men familiar with trade association work are a little in doubt as to exactly what the A.F.A. is and does. We ourselves are at fault, that in our interest in the work we are doing we have neglected blowing our horn a little bit, with the result that those in the marketing end of our industry have had no opportunity to appraise our work. I feel that there are still some who think of our conventions as an opportunity for boisterous disregard of sobriety. It is hard to convey to such men a measure of the serious interest which attends our work.

Let me repeat: There is no conflict of interest between our Association and the foundry trade associations; there is, rather, interdependence and wholesome respect. I know we can look to them for support in any worthwhile undertaking.

More Handbooks Are Needed

New men are entering our industry every day and each year hundreds are advanced to positions of greater responsibility. It is our duty to see that these men learn what we know about operating foundries. Our industry in becoming efficient has become increasingly complex. The art of a generation ago is giving way to the science of tomorrow.

Much of the knowledge in our printed *"Transactions"* is rather inaccessible. The material should be condensed by competent men and published in the form of text books which could be revised at suitable intervals. We have made a start in our "sand book" and our "core book." The new cupola research project will result in a handbook of inestimable value, and there are countless other subjects of foundry operation on which up-to-date information should be assembled and published.

A.F.A. Chapters Help the Industry

Our justification for existence as an Association depends on how effective we are in aiding foundrymen to produce good castings. Our chapters are the greatest single factor in bringing A.F.A. to the foundrymen, and the foundrymen to A.F.A. Instead of meeting once a year at a convention, we now meet over two hundred times. Operating men who cannot attend our national meetings can get to chapter meetings regularly.

Our chapters have done a grand job during the past year. Their programs have been timely, they have overcome many obstacles, and they have increased both their membership and attendance. They can best do the important job of educating the man in the plant.

Furthermore, the acquaintanceships promoted between men of one plant and another are great factors in breaking down barriers of suspicion and jealousy, which have hampered free interchange of information. Truly, our chapters have added great strength to our industry.

More Fundamental Research Needed

Much still remains to be done which would contribute toward the prosecution of the war and which would, at the same time, assist us in the competitive struggle for markets which will be a feature of the post-war adjustment. Our castings industry is not a backward industry by any means, but it has not been advancing at the rate that is most desirable. Technical advance is largely the result of investigations made in the plants of individual companies, and it is natural that the interests of each individual company will dictate the direction in which their researches shall be guided. As a result of this, much fundamental research work for the good of the castings industry has never been completed.

The American Foundrymen's

Association in the past has had only very small sums which could be devoted to research work directed by the Association itself. The research on molding and core sands, which has been supported by A.F.A. funds, has been under way for many years. Much more has been learned about the behavior of sands in contact with hot metal than would be the case if each investigator of the properties of sand worked on only the problems of interest to himself.

We have embarked upon an ambitious program of cupola research which should make available to cupola operators, in the course of a very short time, accurate information as to the most suitable design and best operating method for cupola melting. We have had numerous papers over many years presented to our Association on aspects of cupola melting, but until this research is completed we will not have had a complete picture of the whole subject.

A.F.A. Sets Up Foundation

Because there are so many things we still do not know about the manufacture of castings, and because time is flying past, we must speed up our technical advance. There are many projects which should be initiated for the good of the entire industry. Because work of this kind requires funds beyond those which can be realized from normal association income, it is highly desirable that we have available other money which can be used where the need is greatest.

Your Board of Directors have made provision for the carrying on of this type of work by creating the American Foundrymen's Association Foundation, which will be a fund administered independently of regular Association moneys, to be utilized from time to time for projects of importance to the progress of our industry.

I had hoped at this Convention to be able to outline for you the details of this great plan. However, in a matter as important as this it is necessary that the plans be carefully worked out before going ahead; and until this has been accomplished, an announcement would be premature.

However, I am glad to say that over $50,000 has been subscribed by companies which realize the value of this plan, to underwrite the expenses which may be incurred in setting up this Foundation. It is my belief that the proper utilization of the A.F.A. Foundation will contribute more to the success of the foundry industry 5, 10 and 20 years from now than will any other one action we could undertake today.

Cooperation Marks Year Past

In closing, I wish to state that the year just past has been one of intense interest and pleasure to me. The friendships I have made among foundrymen all over the country will be cherished as long as I live. I cannot begin to acknowledge the help I have received from the many individuals taking part in committee and chapter activities. No man has been too busy but that he has accepted, for the good of the industry, any task assigned to him. Let me say, therefore, that I appreciate greatly the whole-hearted cooperation received from everyone who has taken part in our manifold activities during the past year.

To the members of the staff in the Chicago office I wish to extend my thanks for their hard work and unselfish cooperation. The war has imposed many additional burdens, and the men and women of our national office have done a remarkable job in fulfilling their duties.

C. E. Westover Returns to Industry

It is with regret that I announce the resignation of our Executive Vice-President, Ed Westover, who has accepted a call to return to active foundry management. Ed Westover undertook a difficult job in June of 1941. Since that date no man could have worked harder or more devotedly for the welfare of the American Foundrymen's Association than Ed. Our good wishes follow him in his new position, and I have received his personal assurance that his interest in the welfare of the Association will not in any way be diminished.

The foundry industry, with a proud past, faces a prouder future. Its success depends upon its ability to take advantage of its present opportunities by using the energies, progressiveness and brains of the men who have its destiny at heart.

Thomas W. Pangborn, president of Pangborn Corp., Hagerstown, Md., addressing and accepting for his company the joint Army-Navy "E" award for excellence in war production, at plant ceremonies held April 20. Also on the speaker's platform were Hon. Millard E. Tydings, U. S. Senator from Maryland; Hon. Herbert R. O'Connor, Governor of Maryland; Lt. Col. D. A. Starry, Army Air Forces, Washington, D.C., who made the presentation; Commander H. G. Chandler, U. S. Naval Reserve, who presented "E" pins to Pangborn employees, and Hon. Richard H. Sweeney, Mayor of Hagerstown. Howard W. Easton, oldest employee in point of service, accepted the "E" pins on behalf of the firm's workers.

W. P. B. Simplifies Procedure for Obtaining Aluminum for Patterns

UNDER date of May 13, W.P.B. has issued a new directive considerably simplifying the procedure to be followed in obtaining aluminum for patterns and matchplates. The new order, Direction 1 of CMP-5, "How to Obtain Aluminum Under CMP," eliminates the necessity of every aluminum pattern maker applying for quarterly allotments of aluminum, which was necessary under CMPL-196, issued April 13 and reported in the May issue of *"American Foundryman."*

Under the new directive, purchasers of patterns may secure up to 600 lb. of aluminum pattern or matchplate castings per quarter, plus poundage in excess of 600 lb. by furnishing scrap or obsolete pattern metal, merely by affixing to the order the buyer's MRO symbol and certification of CMP Regulation 7. If his requirements per quarter are more than 600 lb. in excess of the remelt metal he turns in, the buyer may apply for an excess allotment by letter to the Aluminum and Magnesium Division of W.P.B., Washington, D. C. (Ref.: Patterns), giving the weight of the excess aluminum required and the reason why additional remelt is not available.

The new directive reads as follows:

"(a) The word "patterns" as used in the following instructions means only match plates, patterns, core boxes, core driers, and snap flasks made of aluminum. It does not include such items as jigs, fixtures, or forming blocks.

"(b) Patterns (including finished aluminum patterns) are castings under CMP and hence controlled materials.

"(c) When the purchaser of a pattern furnishes the pattern foundry with all the required weight of aluminum in the form of obsolete or defective patterns:

"(1) No preference rating or CMP allotment symbol, number or certification is required on the order to the foundry or to the pattern maker;

"(2) Any foundry may remelt aluminum scrap in the form of obsolete or defective patterns furnished by the prospective purchaser of the new pattern (and only such type of aluminum scrap) without prior authorization; and

"(3) Wherever possible, old patterns should be used to make new patterns.

"(d) When the purchaser of a pattern does not furnish all the aluminum, he may place an authorized controlled material order for aluminum patterns by affixing the symbol MRO on his order and the certification set forth in CMP Regulation No. 7, executed as provided in that regulation, provided that his orders for patterns in any calendar quarter do not exceed by more than 600 pounds the amount of obsolete or defective aluminum patterns supplied by him during such quarter to a pattern foundry for use in making his patterns.

"In the event that a purchaser of aluminum patterns requires in any quarter more than 600 pounds of patterns in excess of the weight of those turned in by him in that quarter as provided in the previous sentence, he may apply for an allotment for the excess by letter to the Aluminum and Magnesium Division of the War Production Board, Washington, D. C., Ref: Patterns. Such letter must show:

"(1) The weight of aluminum patterns applied for during the particular quarter (that is, the weight of aluminum required over and above (i) the weight of his obsolete or defective patterns available for remelting in the particular quarter or already turned in to his pattern foundry during the particular quarter for remelting into new patterns, plus (ii) 600 pounds which is available without specific authorization). For example, if the applicant requires 1,000 pounds of aluminum patterns for the third quarter of 1943 and intends to turn in 100 pounds of obsolete or defective aluminum patterns to his pattern foundry for remelting in that quarter, he should apply for 300 pounds, that is 1,000 pounds less the 100 pounds turned in and the 600 pounds available without specific authorization; and

"(2) The weight of obsolete or defective aluminum patterns which will be or have been supplied by the applicant to the pattern foundry making his patterns during the quarter covered by the application, and why the applicant will be unable to turn in additional amounts of such old patterns.

"(e) If the application is granted, the applicant will receive an allotment and may place an authorized controlled material order for the amount of aluminum patterns covered by the allotment by endorsing his purchase order with the symbol contained on the allotment and with a certification, described in CMP Regulation No. 7, executed as provided in that regulation.

"(f) Pattern manufacturers are hereby authorized to use the MRO symbol endorsed on their customers' orders to obtain aluminum pattern castings. Pattern manufacturers are not required to apply for an allotment of aluminum notwithstanding anything to the contrary in any CMP regulation.

"(g) Pattern purchasers and pattern manufacturers, when using the MRO symbol to obtain aluminum patterns, are not subject to the 100-pound limitation provided in paragraph (c) (2) of CMP Regulation No. 5 relating to purchases of aluminum. Foundries fill only authorized controlled material orders for aluminum patterns (except as provided in paragraph (c) above), which they may recognize by the symbol MRO and the certification described in CMP Regulation No. 7.

"(h) The foregoing direction also applies to a company which makes its own aluminum patterns. Except as provided in paragraph (c) above, every such company places authorized controlled material orders on its own pattern foundry so that the foundry may make delivery of the patterns.

"(i) Nothing in this direction shall be construed to relieve any person from complying with the provisions of paragraphs (c) (4) (v) and (e) (1) of Supplementary Order M-1-l. Pattern foundries, and not the purchaser or user, must file Forms CMP-19 and CMP-24 monthly.

"(j) This direction supersedes the instructions relating to acquisition of aluminum for the manufacture of patterns set forth in CMPL-196, dated April 13, 1943."

One pattern maker has pointed out the possibility of confusion in use of the necessary certifications. Upon receiving an order from a manufacturer, the pattern shop may purchase aluminum pattern or matchplate castings by using the No. 7 certification and the MRO rating and symbol furnished by the manufacturer, not the MRO rating of the pattern shop.

"Emergency Medical Service in Industrial Plants" is the title of a new pamphlet issued by the Medical Division of O.C.D., Washington, D. C., dealing with measures for cooperation between plant medical services and the local emergency medical service organized for care of civilian casualties in wartime. The pamphlet, O.C.D. Publication 3061, is of value to all plant protective groups.

Wisconsin Survey Shows Foundry Jobs Women Hold, Problems of Employment†

By Paul A. Brehm,* M.D., Madison, Wis.

THE women of America have moved into the foundries and have made themselves at home. They are tackling foundry jobs with a determination that characterizes the spirit of our women in making every sacrifice to help win the war. The growing shortage of available manpower has made this absolutely necessary.

Women in foundries is not a new situation on our labor front. They were used extensively during the last war and, in some foundries, have remained in the lighter jobs ever since. Fortunately for us, or perhaps for our women, we in America have not found it necessary to employ women for every conceivable type of foundry labor, such as has been the case in England, Russia and Germany. That was true during the last war and so far is true during this one.

However, we realize that our manpower supply is dwindling rapidly and the great concern now is: "Will we be forced to use women in foundries as extensively as do the foreign countries?"

With this possibility staring them in the face, the Wisconsin Chapter of the American Foundrymen's Association requested a study of the problem as it exists now. It wanted to know (1) how extensively women were being used in foundries, (2) what the foundries were planning in the way of replacing men with women workers, (3) how far they could go with this replacement when the labor situation becomes more acute, and (4) what are the foundries doing to meet the many problems suddenly arising out of hiring women.

To obtain some conception of the solutions to these questions, a cross-section of the foundry industry was visited in Wisconsin and in some of the neighboring states. In all, 30 foundries were visited, 21 of which were employing a total of 968 women in many foundry labor capacities. The largest proportion of women workers in any one foundry was found to be almost one-third of the entire force.

In presenting this report, the author wishes to break down the information under three main headings: (1) The factual job presentation, (2) the health and safety problems, and (3) the special problems in hiring women.

Jobs Women Are Doing

Core Room

By far the largest number of women are working in the core department, where they were found to be doing every type of job necessary. The more highly mechanized the shop, the more jobs it was possible for women to do without too much physical exertion and without requiring the help of men to handle the heavy work.

The core room jobs in which women were found to be employed are as follows:

(1) Core makers—includes bench, roll-over and blower machines.
(2) Oven tenders.
(3) Core pasting, assembling, sorting, cleaning and blackening.
(4) Core inspection.
(5) Core hitching and hooking-on cores and core distribution.
(6) General core labor—carrying materials and supplies to core makers.

Cleaning Room

Women also were found to be employed in the cleaning room on the following jobs:

(1) Welders and cutters.
(2) Grinders—portable and stand.
(3) Chipping—including the heavy air hammer.
(4) Buffing.
(5) Wire straightening.

While very few women have as yet been employed in pouring operations, they are being used as centrifugal casting machine operators (as shown in photo), as ladle liners, and in transporting metal to pouring floors by truck. The Wisconsin survey of womanpower included 31 foundries employing a total of 968 women.

*Supervisor, Industrial Hygiene Unit, Wisconsin State Board of Health.

†Presented before Wisconsin Chapter of the American Foundrymen's Association, April 16, 1943.

Sara Southall, supervisor of employment, International Harvester Co., and consultant for War Manpower Commission, speaking at the St. Louis Congress session on "Women in Industry" April 29, presented valuable facts on employment of women in industry. W. J. Hebard (center), Continental Roll & Steel Foundry Co., E. Chicago, Ind., Chairman of the session. Left, Wm. F. Patterson, Apprentice Training Division, War Manpower Commission, Washington, D. C.

(6) Gardner horizontal grinder operator.
(7) Rotary blast table operators.
(8) Core knockout.
(9) Steel squeezer shakeout.
(10) Wire pullers.
(11) Casting blowout.
(12) Hot casting sorters — on conveyor line.

Molding Department

Jobs that women are doing in the molding department include the following:

(1) Molders — squeezer molding and carrying off their own molds. The largest molds they are making are 14-in. square.
(2) Molders' helpers—shift molds and weights, tipping molds, piling bottom boards, carrying flasks and bottom boards.
(3) Mold checking.

Melting Department

The fewest women are being employed in the melting department. Their jobs are:

(1) Weighing alloy.
(2) Scaler — weighing iron on wheel barrow and wheeling to the elevator to the charging floor. (This woman weighed 100 lb. of iron at a time.)
(3) Taking metal temperatures.
(4) Operating a steel converter furnace.

Pouring

Very few women, as yet, are being used for this operation. The jobs observed were:

(1) Centrifugal casting machine operators.
(2) Ladle liners.
(3) Transporting molten metal to the pouring floors by truck.

Laboratory

Many women are being used in laboratories in every capacity for physical and chemical testing.

Pattern Shop

Although no women were found making patterns, there were a few jobs for which they were suitable, such as:

(1) Carpenter helpers.
(2) Pattern storage and clerical.
(3) Sketching patterns.
(4) Crating and shipping patterns —these included handling very large patterns and doing an admirable job of crating.
(5) Pattern shop general—such as sanding and shellacing patterns.

Storage and Stock Room

In these departments, women are used successfully as clerks.

Shipping, Receiving, Inspection

Women are used in these departments for such jobs as:

(1) Finished casting inspectors.
(2) Weighing, bagging, shipping.
(3) Casting stampers.
(4) Assembly.

Sand Handling

Jobs for which women are being used in handling sand include:

(1) Sand testers.
(2) Operating sand mills of all sizes—including shoveling.
(3) Plowing sand into hoppers.

Miscellaneous Foundry Jobs

The miscellaneous foundry jobs in which women were found to be employed, covered a wide variety of work, such as:

(1) Truck drivers — inside and outside the plant.
(2) Tending doors in passageways.
(3) Crane operators—some women were operating the largest sized cranes and doing an excellent job.
(4) Car washing and greasing.
(5) Service car drivers.
(6) Cooks.
(7) Janitoresses.
(8) Oilers.
(9) Clerks.
(10) Time keepers.
(11) Sweeping.
(12) Blue prints.
(13) Matrons.
(14) Production clerks.
(15) Casting expeditors.
(16) Oil press operator.
(17) Acetylene mixing in the oxygen room.

The jobs for which management in foundries was considering hiring women, covered the above lists in which women are already functioning. In a few instances, actual pouring of metal is being seriously considered. Almost all the foundrymen contacted were opposed to women melting, sand-blasting, pouring, making large moulds, relining furnaces, handling slag, and working in the annealing room or on heavy yard labor.

The problems in the job shops prohibited women from handling the heavy work, unless more mechanical aid could be provided. The maximum weights handled by women in the routine execution of their jobs was 50 lb., although there were rare exceptions to this. The trouble with many of the women was that they wanted to do too much. They wouldn't wait for help but would lift objects they were not supposed to lift.

Work Week

The practice is to work women on a 48-hour-week basis. It is not recommended that this period be extended. At best, foundry work is a matter of hard labor and women are not on a physical par with men, although some notable exceptions do occur.

Work Quality

Management's opinion of the work performed by women was good in almost all cases. A few were most enthusiastic and a few

considered that one man on a foundry job was equal to two women. There is no question that women are better than men at some work, such as the small core room jobs.

Practically all the women were trained for their jobs after they were hired, the exceptions being some welders who received their training at vocational schools or in N.Y.A. courses. With only few exceptions, women were found to learn quickly—often faster than men—and that by and large they worked steadily and with less stalling. Management found them amenable to corrections and criticism, although a little more tact was required with some of the women.

Wage Scales

In almost every plant, the wage scale was equal to that of the men for the same amount of work. Except in two foundries, the labor turnover among women employees was lower than for the men. The principal reasons for quitting work or being fired were:

(1) Child care or other home responsibilities.
(2) Dirty work and work too hard.
(3) Work too hot or too cold in the winter.
(4) Chronic absenteeism.
(5) Foreman trouble and jealousy.
(6) Pregnancy.
(7) Morals.

Age Ranges

The majority of women were married. Their ages ranged from 17 to 62, the average being 30 to 35. The concensus of opinion was that the best workers were in the middle-age range and married, and that young, unmarried girls were not as suitable. Most of the women worked on the day shift only, although in several plants they were used on the second and third shifts as well.

Health and Safety

The hiring of women in foundries has introduced new problems from the standpoint of health and safety. It is well to review those that have occurred, as well as anticipate others that may arise.

Physical Examination

Of foremost importance in safeguarding health and safety is a physical examination program. There should be pre-employment examinations as well as periodic re-examinations. These examinations should be as complete as those made of the male workers and should include a routine chest x-ray film.

Periodic re-examinations should be scheduled as frequently as has been the practice in the past with the men. Pelvic examination procedures are not recommended, except where in the examining physician's judgment they are definitely indicated or where pelvic organ trouble may develop in the course of the work.

Only one of the foundries visited did not give the women a pre-employment examination. Four foundries made no provisions for periodic re-examination. Two of the examining foundries did not include chest x-ray as part of the examinations.

An adequate physical examination program is obviously one of the best safeguards in the interest of health and safety of foundry workers, especially women. Such a program not only helps in proper placement but provides information on impending trouble resulting from the work. As women are placed on more and more of the harder jobs, it is necessary to watch their physical condition to prevent serious physical disability.

Special Health Problems

Several special health problems were discussed with some of the foundries. Silicosis should give no concern. The women employed in the dustiest jobs are obviously there during this war emergency and, since the development of this disease requires several years of continuous heavy exposure, we should not expect cases to come to our attention. Some may argue that women are more susceptible to silicosis than men, but that is speculation and, at least thus far, not based on actual scientific findings.

The possibility of increased menstrual disturbances resulting from exposures to heat is another question that can be argued against. Not only do women seem to withstand heat very well, but heat is an aid in relieving menstrual cramps. The majority of women have normal menstrual cycles and are not likely to endanger their health by performing their usual work during these periods as long as their work is safe during non-menstrual intervals.

There is the possibility, however, that heavy lifting tasks may cause menstrual trouble. The Russian experience indicates that almost twice as great a percentage of women on heavy work had menstrual disturbances as compared to those on the light jobs. Menstrual difficulties alone are a strong argument for providing rest rooms equipped with cots. In the foundries visited, two had no rest rooms, two had inadequate and makeshift rest rooms and two were in the process of construction. The remainder had proper facilities.

Women working in the non-ferrous foundries, where metal mixes containing lead are used, should be watched carefully for early evidence of lead absorption or intoxication. It is recognized that women are more susceptible to lead poisoning than men; therefore, the non-ferrous foundrymen should be on their guard against trouble.

Unless a woman is doing very light work or sitting down at her task, she should not stay on a foundry job after the fact of pregnancy is established. The pregnant woman should be advised by her physician and should not return to employment until it is considered safe to assume the more strenuous tasks. Termination of employment of pregnant women in the non-ferrous foundries having a lead exposure is especially indicated because of added danger to her health during that time and the possibility of miscarriage.

The foundries having nursing or medical services are in a position to render valuable health services to women workers. Because of the nature of foundry work, it is particularly important that adequate health programs be organized. Four of the foundries had full time medical departments, two had part time

physicians in attendance and four had no graduate nursing services.

Safety

The safety of women foundry workers is just as essential as for male employees. In the matter of weight lifting alone, an intelligent policy should be followed.

Women should be carefully selected for the heavy jobs, both by the examining doctor and management. Obviously the strong women only should be placed where they can do the job safely for themselves and for others. This requires a careful analysis of the job and the physical strain likely to occur. Sometimes it will be necessary to make readjustments in the method of handling heavy materials or to add mechanical lifting and conveying equipment. A careful job study will reveal this. Most important of all is the thorough training of women on the *proper methods* of lifting and carrying before they start work. Just as with men, the teaching of proper lifting will prevent trouble and, just as with men, women should be instructed that if the load is too hard to handle, they should get help.

The bad safety practice that impressed the author most, was the lack of proper safety shoes. In only a few foundries was it mandatory that women wear the right kind of shoes before they were allowed to enter the foundry. In the remainder, they were allowed to wear anything, and it was not uncommon to see old house slippers, open-toed shoes, high heeled slippers or old worn-out and torn shoes.

Obviously this is pure negligence and should be remedied immediately. Foundries should adopt a very strict policy in the matter of foot protection. The foundries that did have women wearing proper shoes either sold them directly at cost or paid one dollar on a purchase order to safety shoe dealers.

"I'll Have to Call You Back, Grace—I Have Something on the Stove!"

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In the matter of other safety equipment, such as goggles, respirators, leggings and gloves, the foundries all provided these devices.

Women working at jobs where their breasts are likely to be crushed, jarred or otherwise bruised, should be provided with metal breast shields now on the market. The female breast tissue can be traumatized easily and repeated trauma may produce tumor formation at some later time. This is particularly true of molding operations.

Generally speaking the women provided their own uniforms. Rarely did the companies provide the clothing or make some attempt at uniform style. In all plants the women wore shirts, coveralls, pants or slacks. The hair was covered by caps or turbans to prevent hair from getting caught in moving machinery or to keep out the dirt. No jewelry of any kind should be worn on the job.

With the exception of two foundries, management was of the opinion that absenteeism by women (especially due to illness) was either equal to or less than among the men. This, however, will require careful study over a longer period of time to be definitely established.

The industrial accident rate was lower than for men in all but one foundry—a fact that can be explained on the basis that women are doing the less hazardous jobs and the fact that they are more careful and take less chances. The women take an interest in safety measures, but only rarely did some of the plants make a real effort to organize women's safety programs.

Rest Periods

As an added aid to physical comfort and overcoming fatigue, the women should be given a rest period twice during a shift. Most of the foundries visited allowed 10 to 15 min. in the middle of the morning and afternoon. Some foundries held rest periods optional, or depending upon the desires of the women.

Salt Tablets

The use of salt tablets to prevent heat exhaustion is particu-

larly necessary in foundry work. All the foundries included in this study had such tablets available. It will be necessary to encourage the women to take them regularly during hot weather or when they are exposed to extreme heat in the foundry. The average female foundry worker should take from three to six 10-grain salt tablets each day during extreme heat conditions. Some of them tolerate the sugar-salt combination tablet better than the pure salt alone.

Special Problems in Hiring Women

As many foundries are hiring women for the first time, and others will be hiring them, it is well to consider some of the problems and conditions that have occurred so that the uninitiated foundryman knows what to expect.

Sanitary Facilities

It is required that separate sanitary facilities be provided for women workers. Some of the foundries had to hire women suddenly before they had an opportunity to make these special provisions, with the result that now they have a few headaches in arranging makeshift facilities while the fight goes on to get priorities on materials and equipment to construct a decent place. If a foundry knows that it will be hiring women, it should start preparing for that emergency now.

As a warning, some foundries are going to make a mistake in judgment if they anticipate hiring only a few women and provide sanitary facilities for just that number. Experience has shown that the number has had to be increased and the equipment has become inadequate. When making plans, be sure they will accommodate the possibility of having to use many women employees.

It is necessary to have wash rooms, toilet rooms, showers and lockers for foundry women. Seven foundries had no shower facilities and no lockers. Such equipment is necessary to cleanliness and good sanitation as well as an aid to good health. Soap should be furnished in the wash rooms.

The towel policy varied in the foundries. In five plants, the women brought their own towels and in two of these foundries the plant had them laundered. Nine foundries furnished paper hand towels. The remaining plants furnished cloth towels and paid for laundering them. The cleaning frequency of the wash rooms and toilet rooms varied from three times a week to daily cleaning service. The women as a rule cooperated well in helping to keep such rooms clean and orderly.

It is far better to have the women eat their lunch in the rest room or locker room in the absence of a plant cafeteria or restaurant. It is not good policy to allow them to eat at their place of work. In the foundries visited, the minimum lunch period was half an hour. Some foundries allowed an hour for lunch.

Many of the foundries provided sanitary napkins for their female employees, wherever possible these napkins being available in special vending machines. Those foundries that did not have the napkin dispensers were willing to install them if they could get them. A few of the foundrymen had not given the matter much thought. Sanitary napkins should be part of the supplies placed at the disposal of the women.

Sex Problems

Some rather vivid sex problems have occurred in a few of the foundries. Unfortunately sex is a problem that cannot be anticipated in hiring groups of women. Occasionally one will turn out to be of the type that is frowned upon by our social and moral standards.

The devolpment of immoral acts within the foundry can be prevented by adequate supervision and such supervision is particularly necessary on the late shifts. This situation was best handled in a few of the foundries by placing matrons on all shifts using female workers and is a solution other foundrymen should keep in mind. The problem isn't as likely to occur where large numbers of women are employed on any one shift. The guilty ones are rare and the other women help to keep pretty close watch and report anything out of line.

Taking metal temperatures is one of the few melting department jobs where women have thus far been utilized, although in one steel foundry plant covered by the Wisconsin survey a woman was operating a converter.

Home Responsibilities

Before hiring women workers, serious consideration should be given to their home responsibilities, especially where they have small children. The employer should be satisfied that these children are properly cared for by relatives, trusted friends or in a suitable nursery home or school. Some foundries have strict rules on hiring women where child care may be a problem. A woman whose mind is occupied by worry over her children is not alert to her job and sooner or later she will quit to take care of her family.

Some women entering foundry work for the first time are frightened by the noise, the rattle of machinery, the smoke and dirt and the molten metal. Unless tact and patience is used to accustom her to this new activity and thorough job training is given her, nervousness and fright will render her a poor worker and an early loss from the payroll.

In only rare instances has alcoholism been a problem among women employees. With women, as with men, such practices have

no place in the industrial program.

Women's Clothing

The author has asked about the problem of women's clothing around the foundry on hot jobs or in the summer months. We all know that many of the men in foundries are accustomed to stripping down to the waist and let the sweat roll where it may. Obviously that practice cannot apply to women. If the safety equipment firms have not already done so, the type of summer work uniforms should receive some serious thought. It is suggested that the slacks or coveralls be of light material and not close fitting. A shirt of light weight material and with short sleeves will help. The author believes that the women themselves will handle the problem of how much clothing goes on inside the outer garments.

Conclusion

Of course, we are all agreed that, with only few exceptions, women's place is not in the foundry. But this is war and again we have to call on womanpower to help us over a critical period. Our manpower shortage is acute but it will get much worse before it gets better.

We find women doing all sorts of foundry jobs now and we can fully expect that they will have to do many more before the end of the war. Those foundries in which women are not working at present and which don't want them, may wake up one of these mornings and find that they must hire them to keep the plant running.

The type of manpower available today is far different from the selection possible before the war. Now foundrymen get the best help they can, and in many foundries the answer has been women. In view of the kind of men hireable for foundry labor today, it can be said that women are stepping in and doing a splendid job—in most cases a better job. Foundries might just as well profit by the experience of others and make plans accordingly.

In setting up a program for replacing men with women in the foundry, it is wise to start a few women at the outset. This will provide a nucleus or a key group of female workers to build upon and expand, and will give an opportunity to iron out the new problems before a large group of women is hired.

This war is not over! We can expect it to continue for some time, and before it is over many changes will have to be made in foundry labor. The wise foundry operator will realize this fact and prepare for the inevitable *now*. Otherwise he will not only suffer from chronic headaches but will seriously hamper his production, which is so vitally necessary to winning the war.

Entries in A.F.A. Apprentice Contests Draw Crowds at St. Louis

ENTRIES in the National A.F.A. Apprentice Contests again proved an interesting feature of the St. Louis Foundry Congress, as they have been at the annual meetings of the Association since the first contest was staged at Milwaukee in 1924. This year, perhaps, interest was heightened by the present emphasis on all forms of training, in view of present manpower shortages.

A large number of entries were submitted to the national contests, following judging of several hundred entries in chapter area and local plant contests. Five chapters sponsored area competitions preceding the convention: the Northeastern Ohio Chapter for the Cleveland area; Wisconsin Chapter for the Milwaukee area; St. Louis Chapter for that area; Quad City Chapter for the Moline-Rock Island-Davenport-East Moline area; and the East Chicago, Ind., Vocational Schools.

In addition, apprentices from 15 individual foundry plants were represented in the final competitions. Cash prizes of $30 for 1st prize, $20 for 2d prize and $10 for 3d prize were awarded to winners in each of the four competitions, the winners being as follows:

Patternmaking

1st—Ralph Peterson, Central Pattern Co., St. Louis.

2nd—Wm. Waddicor, Jr., Brown & Sharpe Mfg. Co., Providence, R. I.

3d—Brandon Elias, International Harvester Co., Tractor Works, Chicago.

Non-Ferrous Molding

1st—Anthony Ivancich, Standard Brass Works, Milwaukee, Wis.

2nd—Edward H. Drebus, Universal Foundry Co., Oshkosh, Wis.

3d—Gregory Reindl, Wisconsin Aluminum Foundry Co., Milwaukee.

Gray Iron Molding

1st—L. R. Kinsinger, Caterpillar Tractor Co., Peoria, Ill.

2nd—Theodore H. Anderson, Brown & Sharpe Mfg. Co., Providence, R. I.

3d—Michael Slivka, Hill Acme Co., Cleveland.

Steel Molding

1st—George Metzler, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

2nd—Clarence Kasper, Continental Roll & Steel Foundry Co., East Chicago, Ind.

3d—Arthur Tazalla, Maynard Electric Steel Castings Co., Milwaukee.

The following individual plants had apprentice entries represented in the national contests:

Caterpillar Tractor Co., Peoria, Ill.
Miehle Printing Press Co., Chicago.
American Manganese Steel Div., Chicago Heights, Ill.
Wisconsin Aluminum Foundry Co., Manitowoc, Wis.
Gisholt Machine Co., Beloit, Wis.
Becker Mfg. Co., Two Rivers, Wis.
Universal Foundry Co., Oshkosh, Wis.
Le Tourneau Co. of Georgia, Toccoa, Ga.
Lynchburg Foundry Co., Lynchburg, Va.
Ann Arbor Foundry Co., Ann Arbor, Mich.
E. I. duPont de Nemours & Co., Wilmington, Del.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Brown & Sharpe Mfg. Co., Providence, R. I.

International Harvester Co., Tractor Works, Chicago.
International Harvester Co., McCormick Works, Chicago.

Members of the St. Louis District Chapter of A.F.A. acted as judges of the national contests, two of the gray iron molding contest judges also acting as judges of the patternmaking contest in order to check on the moldability of patterns submitted. The judges, headed by Emil A. Goerger, City Pattern & Model Co., St. Louis, as chairman of the St. Louis chapter Apprentice Committee, were as follows:

Steel—

L. A. Kleber, General Steel Castings Corp., Granite City, Ill.
A. C. Skelton, Key Company, St. Louis.
J. D. Walsh, Scullin Steel Co., St. Louis.

Gray Iron—

G. W. Mitsch, American Car & Foundry Co., St. Louis.
Clee Shy, Banner Iron Works, St. Louis.
H. P. Bentrup, Carondelet Foundry Co., St. Louis.

Non-Ferrous—

J. P. Hill, Modern Brass Foundry, St. Louis.
A. J. Messmer, Messmer Brass Co., St. Louis.
C. A. Kenyon, Northwestern Brass Foundry Co., St. Louis.

Patternmaking—

R. A. Jacobsen, Carondelet Foundry Co., St. Louis.
Fred Bergmann, American Pattern & Model Co., St. Louis.
E. Parker, Fulton Iron Works, St. Louis.

Rules and regulations for the national Apprentice Contests are under the jurisdiction of the A.F.A. Apprentice Contest Subcommittee, of which C. W. Wade, Caterpillar Tractor Co., Peoria, Ill., is chairman. Awards are made possible by the Association's Board of Awards.

Gray Iron, Magnesium Papers Win A.F.A. Student Essay Contest

WINNERS of the 1943 A.F.A. Student Essay Contest were announced at the Business and Awards meeting, April 29, at the St. Louis convention, and prizes of $100 and $50 awarded for First and Second place, respectively. Fred G. Sefing, International Nickel Co., New York, as Chairman of the Committee on Cooperation with Engineering Schools, which sponsored the contest, announced the winners.

First prize was won by Harry R. Dahlberg, student at the University of Minnesota, Minneapolis, Minn., for his paper on "The Effect of Graphite Particle Size in the Inoculation of Gray Cast Iron." Mr. Dahlberg, whose trip to St. Louis was sponsored and paid for by the Twin City Chapter of A.F.A., was president of the University of Minnesota Student Chapter last year.

Harry R. Dahlberg

Winner of second prize was Gerald Golden, student at the Illinois Institute of Technology, Chicago, for his paper on "Magnesium Alloy Sand Casting Theory and Practice." The Chicago Chapter of A.F.A. sent Mr. Golden to the convention to receive his prize and benefit from the many technical sessions.

In his remarks of presentation Mr. Sefing reviewed the work of the Committee on Cooperation with Engineering Schools since its organization in 1936, stating that it was the purpose of the Association "to interest the engineering schools of the country in the foundry business, in foundry research, and in providing young men who eventually would assume the responsibilities of this great industry." Funds for the prizes were made available by the A.F.A. Board of Awards, using income from a fund donated by the S. Obermayer Co., Chicago.

Gerald Golden

Five judges, headed by P. E. Kyle, Massachusetts Institute of Technology, Cambridge, Mass., carefully reviewed the papers submitted from a number of engineering schools in deciding on the winners.

New N.E.O. Committee Chairman Appointed

HENRY J. TRENKAMP, The Ohio Foundry Co., Cleveland, has been appointed chairman of the Northeastern Ohio Chapter Cupola Research Finance Committee. Mr. Trenkamp succeeds J. M. Lathrop, Penton Publishing Co., Cleveland.

Armstrong Serving on War Metallurgy Staff

T. N. ARMSTRONG, metallurgist, International Nickel Co. since 1935, also is serving part-time on the staff of the War Metallurgy Committee of the National Academy of Sciences, National Research Council. Mr. Armstrong's work in directing research on steel foundry products and on low-temperature properties of metals, coupled with earlier metallurgical work at the Norfolk Navy Yard and development work on alloy steels, should be particularly useful to the war committee in metallurgical research on war products as well as metal

production problems for the Office of Production Research and Development of W.P.B.

He has been a member of A.F.A. for some time, serving as Chairman of the Steel Division's Program and Papers Committee for several years, and has been elected Chairman of the Division for the ensuing year.

More Wartime Problems That Await Solutions

AMERICA'S success in finding solutions to many vital technical problems of mechanized warfare is already a record of brilliant achievement. Many important problems, however, still remain unsolved, and the Government is constantly seeking solutions through local groups. Some of these problems were listed in the January and March issues of *American Foundryman,* and an additional list is shown below. These lists were released by the Associated Defense Committee of Chicago Technical Societies, on which the Chicago Chapter of A.F.A. serves.

A.F.A. members desiring to offer solutions should send them to Robert C. Brown Jr., Chairman, Associated Defense Committee of the Chicago Technical Societies, 205 W. Wacker Drive, Chicago.

Aeronautics

A-2. Windshield that is fog and frost proof. (When pursuit plane dives from a high, cold level into warmer air, frost forms on inside and outside of windshield. Air space, vacuum space, double windshield with hot air between, heated glass, hot air blast outside and inside, all are not new ideas and most of them have been tried.)

A-6. Catapults and speed retarding devices for aircraft.

A-7. Aircraft propellers having greater efficiency.

A-9. Improved refueling equipment both for refueling in air and on the ground with greater speed.

A-13. Gyro pilot that is steady and doesn't manufacture artificial rolls, wobbles or jerks.

A-14. Remote drive for two or more propellers.

Guns, Sights

A-32. Improved automatic anti-aircraft guns and small arms.

A-35. Satisfactory remote control gun turrets and mounts.

War Machines

A-39. Invasion devices.

Chemical and Metallurgical

A-22. Substitutes for rubber.

Engines

A-26. High altitude engine superchargers.

A-28. Prime movers or starters, such as spring motors.

Miscellaneous

A-43. An effective detecting device to be carried on small boats.

A-45. Protecting devices against magnetic mines.

A-47. Floating and fixed bridges.

A-48. Camouflage.

A-50. Mapping devices.

A-51. Construction equipment.

A-54. Well drilling equipment.

A-57. Radios substantially free from static.

A-59. Searchlights.

Once ideas have been submitted to the committee, they become confidential material and those submitting should not expect to hear whether or not they have been accepted.

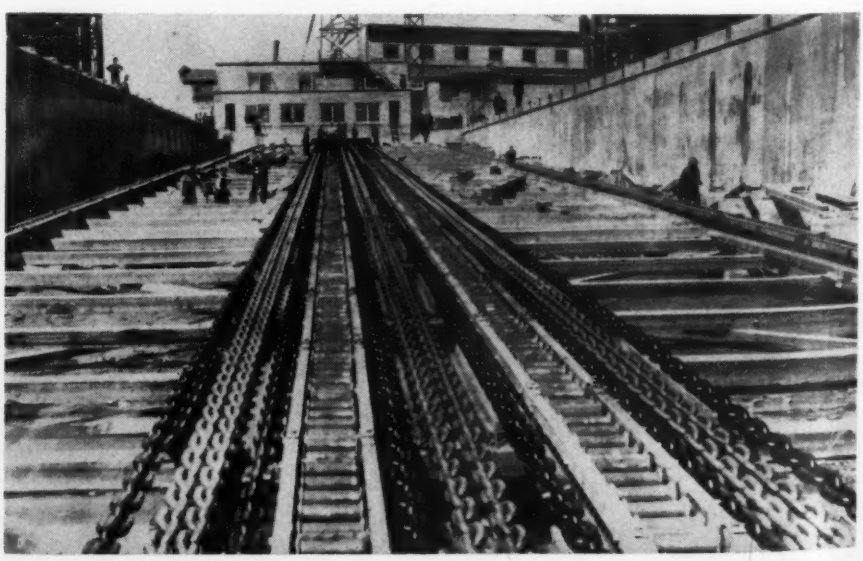
Canadian Firm Casts Largest Steel Chain

THE largest cast steel chain ever manufactured in Canada recently was completed by Sorel Steel Foundries, Ltd., Montreal, Quebec, according to announcement by firm executives. Involving 1¼ miles of 2¼ in. chain, cast in 90 foot lengths, the job is a good example of the foundry's flexibility and ingenuity in meeting a new and difficult war production problem.

The chain was ordered in connection with a marine railway in a shipbuilding yard located alongside a river too narrow for conventional stern-first slip launching. Instead, the 10,000-ton ships were to be built in a series on either side and launched slowly upon a launching platform, using the chain as the restraining medium. To meet the shipyard schedule the chain was required in less than two months from the date of the order, yet delivery was made in even less time than called for by the contract.

One interesting problem of manufacture involved testing the chain to be sure each length would stand up under the drag of the 10,000-ton hull and launching platform. To meet this problem, eight lugs were welded around the sides of a 180-ton scow, hawsers run from each lug to the center of the scow and attached to each 90-foot length of chain, the other end of which was hooked to a shear leg. The leg was then operated, lifting against the scow a total deadweight of 125 tons, raising the scow 27 inches on the draft line, exerting a strain beyond the maximum specified. Out of 8,400 links tested, only 9 were rejected.

An illustrated brochure is being issued by the company on this unusual job, and is available to anyone interested, by writing the company.



Largest cast steel chain ever produced in Canada, made by Sorel Steel Foundries, Ltd., Montreal. The 2¼ in. chain, cast in 90 ft. lengths and 1¼ miles long, is installed in a shipyard marine railway and is used in slow-launching 10,000 ton Victory ships.

New Members

During the past month A.F.A. Chapters registered a total of 160 new memberships, thus exceeding even the excellent mark of the previous month. Twenty-one different chapters contributed to this fine showing, Western Michigan crashing through with 31 new enrollments, Wisconsin 16, and Ontario 13. Other chapters who registered two-figure gains were: Northern California and Chesapeake, 11 each; Eastern Canada & Newfoundland, and Chicago, 10 each. Such aggressive membership work gives newly elected Chapter officers and directors real marks to shoot at, and we know they'll keep up the splendid work!

(April 16 to May 15, 1943)

Conversions

Company from Personal

Gilbert Brass Foundry Co., St. Louis, Mo. (Chas. F. Gilbert, Jr., Vice-President).

Central Indiana Chapter

George E. Miller, Foundry Problems & Control, Allison Div., General Motors Corp., Indianapolis.

Central New York Chapter

B. L. Averback, Chief Metallurgist, U. S. Radiator Corp., Geneva, N. Y.
Fred Charles Reiss, General Foreman, Alloys & Products, Inc., New York.

Chesapeake Chapter

*American Radiator & Standard Sanitary Corp., Baltimore, Md. (James F. Toy, Manager).
Harold F. Bishop, Associate Metallurgist, Naval Research Laboratory, Washington, D. C.
Charles L. Clemons, Jr., Sand Research, Naval Research Laboratory, Washington, D. C.
Dr. L. W. Eastwood, Chief Metallurgist, Maryland Sanitary Mfg. Co., Baltimore.
Lewis H. Gross, American Radiator & Standard Sanitary Corp., Baltimore.
A. John Mardick, Plant Superintendent, Maryland Sanitary Mfg. Co., Baltimore.
*Maryland Sanitary Mfg. Co., Baltimore (T. T. Alverson, President).
Carl E. Ratliff, American Radiator & Standard Sanitary Corp., Baltimore.
C. C. Schott, American Radiator & Standard Sanitary Corp., Baltimore.
Ernest B. Wagaman, Foundry Foreman, Landis Tool Co., Waynesboro, Pa.
Frank J. Warren, Production Superintendent, Maryland Sanitary Mfg. Co., Baltimore.

Chicago Chapter

Andrew T. Beck, Student, Washburne Trade School.
*Chicago Aluminum Castings Co., Chicago. (George H. Horton, Manager)
John Crevie, Student, Washburne Trade School.
Eric W. Ferm, Metallurgist, Miller & Co., Chicago.
Donald B. Murray, Apprentice, Continental Roll & Steel Foundry Co., East Chicago, Ind.
John W. Rhoads, Supervisor, Chrysler Corp., Dodge-Chicago Plant, Chicago.
O. H. Selke, General Foreman, Burnside Steel Foundry Co., Chicago.
*Universal Castings Corp., Chicago. (E. W. Landow, Chief-Production Engineer)
Omer A. Walters, Burner, Continental Roll & Steel Foundry Co., East Chicago, Ind.
Charles F. Walton, Metallurgist, Assn. of Manufacturers of Chilled Car Wheels, Chicago.
William C. Wick, Cupola Operator, Armour Research Foundation, Chicago.

Cincinnati District Chapter

Robert C. Boyd, Metallurgist, American Radiator & Standard Sanitary Corp., Louisville, Ky.
Frederick W. Hoffman, Owner, Hoffman Cabinet Works, Lancaster, Ohio.
C. O. O'Brien, A. D. Cook, Inc., Lawrenceburg, Ind.
*Schaible Foundry & Brass Works Co., Cincinnati. (Geo. Jetter, Plant Supt.)
Lee O. Steinle, National Gypsum Co., Luckey, Ohio.

Detroit Chapter

John W. Courtney, Dearborn, Mich., Field Engineer, Electro Refractories & Alloys Corp.
Raymond J. Duquette, Pattern Engineer & Tool Designer, Budd Wheel Co., Detroit.
O. L. Goelet, Aluminum Co. of America, Detroit.
Paul Knop, Chief Inspector, Albion Malleable Iron Co., Albion, Mich.
William T. Mixer, Foundry Superintendent, Buick Motor Co., Flint, Mich.
Charles Morrison, Metallurgist, Saginaw Malleable Iron Division, Saginaw, Mich.
F. F. Pearles, Detroit, Mich., Sales & Technician, Atlantic Chemical & Metals Co.

Eastern Canada & Newfoundland Chapter

E. Boyer, Foundry Inspector, Jenkins Bros. Ltd., Montreal, Que.
W. J. Briggs, Foundry Foreman, The Frost & Wood Co., Ltd., Smith's Falls, Ont.
P. E. Carriere, Works Manager, Joliette Steel Ltd., Joliette, Que.
H. T. Doran, Montreal, Representative, Whiting Corp. (Canada) Ltd., Toronto, Ont.
F. E. Ellis, Assistant Foreman, Jenkins Bros. Ltd., Montreal.
H. E. Francis, Pattern Foreman, Jenkins Bros. Ltd., Montreal.
*The Frost & Wood Co. Ltd., Smith's Falls, Ont. (E. J. Ryan, Superintendent)
E. Gagnon, Assistant Foreman, Jenkins Bros. Ltd., Montreal.
James Grieve, Assistant Supervisor, Dominion Engineering Works, Ltd., Lachine, Que.
*F. Hyde & Co., Ltd., Montreal. (S. K. Robinson, Manager)

Metropolitan Chapter

*Ace Metal Co., Brooklyn, N. Y. (Walter Helmedach, Foundry Superintendent)
William F. Hooper, Bloomfield, N. J., Certified Core Oil Co., Chicago.

Michiana Chapter

Grover C. Cole, Foundry Superintendent, Round Oak Co., Dowagiac, Mich.
Erwin Doerschler, President-Foundry Superintendent, U. S. Foundry Corp., Kalamazoo, Mich.
*U. S. Foundry Corp., Kalamazoo. (Erwin Doerschler, President-Foundry Supt.)
Thomas Veld, Vice-President-Core Supt. U. S. Foundry Corp., Kalamazoo.
Harold J. Westenhiser, Secretary-Treasurer-General Manager, U. S. Foundry Corp., Kalamazoo.

Northeastern Ohio Chapter

W. E. Carver, Chief Permanent Mold Engr., Monarch Aluminum Mfg. Co., Cleveland.
A. M. Hubman, Magnesium Foundry Superintendent, Monarch Aluminum Mfg. Co., Cleveland.
N. Jannetto, Metallurgist, Monarch Aluminum Mfg. Co., Cleveland.
J. H. Keating, Factory Manager, Monarch Aluminum Mfg. Co., Cleveland.
Steve Kubala, Foreman, National Aluminum Cylinder Head Co., Cleveland.
John Mader, Superintendent, Permanent Mold Foundry, Monarch Aluminum Mfg. Co., Cleveland.
*Monarch Aluminum Mfg. Co., Cleveland. (D. R. Gould, Secretary)
Parnell J. Porter, Assistant Superintendent, National Aluminum Cylinder Head Co., Cleveland.
R. Sours, Foreman, Sand Foundry, Monarch Aluminum Mfg. Co., Cleveland.

Northern California Chapter

Dewitt Agler, Owner, Western Foundry, San Jose.
Leon Cameto, Owner, Production Foundry Co., Oakland, Calif.

*Company member.

Harold E. Henderson, H. C. Macaulay Foundry Co., Berkeley, Calif.
Howard Lauffer, H. C. Macaulay Foundry Co.
John Nazro, Sales Engineer, General Metals Corp., Oakland.
H. Milton Nystrom, Sales Manager, Vulcan Steel Foundry Co., Oakland.
Milton Oakes, Assistant Foreman, American Manganese Steel Division, Oakland.
*Permanente Metals Corp., Permanente, Calif. (Robert H. Davies, Superintendent)
Bob Singleton, Metallurgist, Joshua Hendy Iron Works, Sunnyvale, Calif.
*U. S. Pipe & Manufacturing Co., San Francisco. (Philip B. Wallace, Jr., Co-Partner)
Roy Williams, Core Room Foreman, Joshua Hendy Iron Works, Sunnyvale.

Northern Illinois-Southern Wisconsin Chapter

*Rockford Brass Works, Rockford, Ill., (W. H. Ross, President)

Ontario Chapter

*A-1 Aluminum Foundry, Ltd., Vancouver, B. C. (Esmond C. J. Bird, President)
*Canadian Car & Foundry Co. Ltd., Fort William, Ont. (Al. Beaumont)
John Dick, Foundry Supervisor, Sully Brass Foundry Ltd., Toronto, Ont.
*Philip Gies Foundry Ltd., Kitchener, Ont. (Harry H. Gies, General Manager)
D. H. Gilbert, Plant Manager, Dominion Wheel & Foundries Ltd., St. Boniface, Manitoba.
Paul Hrivnak, Foundry Foreman, Crouse-Hinds Co. of Canada, Ltd., Toronto.
*Kondu Mfg. Co. Ltd., Preston, Ont. (D. H. Kirkwood, Managing Director)
James Franklin Morris, Assistant to Chief Metallurgist, International Harvester Co., Hamilton, Ont.
*Precision Dies & Castings Limited, Toronto. (C. H. S. Bell, Manager)
W. Reed, Superintendent, Kondu Mfg. Co., Ltd., Preston, Ont.
G. Thorne, Crouse-Hinds Co. of Canada Ltd., Toronto.
C. B. Westbrook, Works Manager, Peterboro Lock Manufacturing Co., Peterboro, Ont.
Leslie V. Whiton, Foreman, Melting Plant, Dominion Magnesium Ltd., Haley, Ont.

Quad-City Chapter

Haydn Laycock, Peoria, Ill., Frederic B. Stevens, Inc., Detroit.

St. Louis District Chapter

John Bradford, Gilbert Brass Foundry Co., St. Louis.
Jesse Cox, Gilbert Brass Foundry Co., St. Louis.
Albert R. Frenette, Gilbert Brass Foundry Co., St. Louis.
James F. Gilbert, President, Gilbert Brass Foundry Co., St. Louis.
Peter L. Gravet, Gilbert Brass Foundry Co., St. Louis.
Ralph M. Hill, Jr., Metallurgist, East St. Louis Castings Co., East St. Louis, Ill.
*St. Louis Malleable Casting Co., St. Louis. (H. H. Luedinghaus, President)
Arthur J. Schneider, Kirkwood, Mo., Field Manager, Sterling Grinding Wheel Div., Tiffin, Ohio.
W. H. Wilkinson, Process Inspector, General Steel Castings Co., Madison, Ill.

Southern California Chapter

W. H. Peterson, Superintendent's Assistant, Washington-Eljer Co., Los Angeles.

Toledo Chapter

Gerald R. Rusk, Freeman Supply Co., Toledo, Ohio

Twin-City Chapter

E. O. Erickson, St. Louis Park, Minn., Swan-Finch Oil Corp., Chicago, Ill.

Western Michigan Chapter

V. K. Alexander, Cleaning Supv., Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Paul Antol, Core Supv., Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Richard E. Babcock, Foundry Apprentice, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Charles Barnett, Melter, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Ray C. Bath, Heat Treat Foreman, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Arthur C. Beckert, Saginaw, Mich., Repr., American Air Filter Co., Louisville, Ky.
L. M. Beyers, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
James F. Campbell, Melter, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Wm. J. Cannon, Apprentice, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Harry Christensen, Assistant Plant Manager, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Stanley Davis, Radiographer, Campbell Wyant & Cannon Foundry Co., Muskegon Hts.
Howard M. Elmore, Assistant to Metallurgist, Lakey Foundry & Machine Co., Muskegon.
Thomas M. M. Foote, Chief Chemist, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
William G. E. Forsburg, Pattern Foreman, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Albert J. Fruchtl, Master Mechanic, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Phillip A. Grimard, Chemist, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
S. J. Huber, Plant Manager, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
W. R. Krepps, Plant Manager, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Perry E. Lepley, Foreman, Sealed Power Corp., Muskegon.
Garnet D. McConnell, General Foreman, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Geo. W. Myers, General Foreman, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Edwin W. Olsen, Metallurgist, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Dick Palsrok, Foreman, Sealed Power Corp., Muskegon.
Leonard Reed, Core Supervisor, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
William H. Richardson, Foundry Supervisor, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Thomas Stead, Metallurgist, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
V. G. Stearns, Maintenance Supervisor, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Leon B. Thomas, Chief Metallurgist, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
Chester J. Van Daum, Personnel Director, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.
John Van Haver, Melting Supervisor, Sealed Power Corp., Muskegon.
Douglas J. Weatherbee, Melter, Campbell, Wyant & Cannon Foundry Co., Muskegon Hts.

Western New York Chapter

R. W. Bishop, Metallurgist, Electric Metallurgical Co., Niagara Falls, N. Y.
Horace G. Swan, Engineer of Tests, Symington Gould Corp., Depew, N. Y.

Wisconsin Chapter

John J. Christiansen, Core Room Foreman, Wisconsin Grey Iron Foundry, Milwaukee.
Elmer W. Hintz Superintendent, Crucible Steel Casting Co., Milwaukee.
John E. Johnson, Superintendent, Industrial Relations, Ampco Metal, Inc., Milwaukee.
Joseph M. Kaufman, Belle City Malleable Iron Co., Racine, Wis.
Adolph Klamrowski, Coreroom Foreman, Ampco Metal Inc., Milwaukee.
A. C. Lange, Jr., Coreroom Foreman, Crucible Steel Castings Co., Milwaukee.
Max McCotter, Purchasing Agent, Crucible Steel Castings Co., Milwaukee.
Byron F. Player, Ampco Metal, Inc., Milwaukee.
Byron T. Player, Laborer, Ampco Metal, Inc., Milwaukee.
Erwin Rathlesberger, Salesman, Delta Oil Products Co., Milwaukee.
Chester S. Rygiewicz, Assistant Foreman, Wisconsin Grey Iron Foundry, Milwaukee.
William T. Schmidt, Supv. of Patterns & Castings, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis.
Leslie H. Stier, Molder (Floor), Ampco Metal, Inc., Milwaukee.

F. P. Ulezelski, Supervisor-Molding, Ampco Metal, Inc., Milwaukee.
Mike Verbos, Foreman-Molding, Ampco Metal, Inc., Milwaukee.
B. J. Witkowski, Assistant Foreman, Ampco Metal, Inc., Milwaukee.

Outside of Chapter

O. E. G. Abrahamson, Vice-President, Headford Bros. & Hitchins, Waterloo, Iowa.
Louis E. Anderson, Tech. Sales, Hercules Powder Co., Wilmington, Del.
Edward F. Bahan, Vice-President & General Manager, Bahan Textile Machinery Co., Greenville, S. C.
J. C. DeHaven, Research Engineer, Battelle Memorial Institute, Columbus, Ohio.
K. H. Hamblin, Assistant General Manager, General Fire Extinguisher Co., Providence, R. I.
J. M. Henchal, Oil City Brass Works, Inc., Beaumont, Texas.
J. F. B. Jackson, Technical Superintendent, David Brown & Sons, Ltd., Penistone, Sheffield, England.
*Ludlow-Martin Steel Co., Jackson, Miss. (C. B. Gauthier, Vice-President)
William J. Sommer, Metallurgical Control Inspector, Westinghouse Electric & Mfg. Co., Trafford, Pa.
G. G. Stickney, Hartford, Conn. (Sales Engineer), SPO, Incorporated, Cleveland.

Government Orders of the Day for Industry

More detailed information on any of the following news briefs may be obtained by writing direct to the U. S. Information Center, 1400 Pennsylvania Ave., N.W., Washington, D. C. For prompt reply, it is suggested that requests be made by Release numbers shown.

Materials

New Aluminum Form. (WPB)—To simplify aluminum reporting under CMP, Aluminum and Magnesium Div. has issued new form CMP-24, to be used by all producers and distributors of aluminum products (except ingots) in reporting monthly shipments. *(Release No. WPB-3462)*

Study Soybean Oil Transport. (Dept. Agr.)—Transportation problems of the industry discussed at recent meeting of Soybean Processors Industry Advisory Comm. of Food Distribution Admin. *(Release No. AG-142)*

Scrap

Plan Aluminum Changes. (WPB)—Termination June 30 of previously established schedule of prices paid for idle aluminum, announced recently, directing such material into normal scrap channels. *(Release No. WPB-3433)*

Product

Aluminum Orders Protected. (WPB)—Orders for aluminum castings approved for April delivery on Form PD-26A given status of authorized controlled material orders, eff. April 24, and must be accepted and filled by aluminum producers as prescribed by CMP Reg. 1. *(Release No. WPB—3335)*

Clarify Malleable Pricing. (OPA)—Amend. 3 to MPR-241, eff. April 15, defines for sellers the regulation under which products composed of malleable cast iron should be priced. *(Release No. OPA-2199)*

Machine Rule Controls Parts. (OPA)—Wholesalers and dealers of frames, bolsters, couplers and yokes subject to provisions of machinery and machinery parts price regulation, under Amend. 84 to MPR-136, eff. May 19. *(Release No. OPA-2470)*

Modify Boiler Rule. (OPA)—Amend. 2 to MPR-272, eff. May 19, restores practice of manufacturers of cast iron boilers and radiators of charging for delivery from point of delivery to job site. *(Release No. OPA-T-859)*

Pipe & Fitting Transportation. (OPA)—Provisions relating to transportation of cast iron soil pipe and fittings modified May 12 to indicate clearly that rail and motor carrier shipments are covered, clarification contained in Amend. 2 to RPS 100, as amended, eff. May 17. *(Release No. OPA-2450)*

Pipe Fittings Order Change. (WPB)—Gray iron, malleable iron, and brass and bronze pipe fittings now administered under Limitation Order L-288, issued April 17, instead of under Sched. II of Limitn. Order L-42. Sched. II revoked, provisions being incorporated in L-288 without modification. *(Release No. WPB-3208)*

Reduce Pipe Fittings. (WPB)—Number of types of steel pipe fittings reduced from 38,784 to 3,615 by Limitation Order L-278 issued May 8, to be administered by Shipbuilding Div. *(Release No. WPB-3476)*

Soil Pipe Restrictions. (WPB)—No relaxation in restrictions on manufacture of cast iron soil pipe, it was emphasized at meeting of Cast Iron Soil Pipe & Fitting Industry Advisory Committee, in Washington recently. *(Release No. WPB-3117)*

Sanitary Pipe Encouraged. (WPB)—Installation of cast iron soil pipe and fittings for sanitary drains in buildings should be continued as long as raw materials are available, urged by Director of Plumbing & Heating Div. April 20. *(Release No. WPB-3255)*

Ease Household Plumbing Rule. (WPB)—To expedite priority applications for new civilian plumbing and heating equipment, Form PD-851 issued by Plumbing & Heating Div. and obtainable at WPB field offices. *(Release No. WPB-3290)*

Metal Savings Ordered. (WPB)—Further savings in such critical materials as copper, copper base alloy and zinc, used in manufacture of plumbing fixture fittings and trim, ordered May 6. *(Release No. WPB-3444)*

Ration Cooking Stoves. (OPA)—Nationwide rationing of heating and cooking stoves burning coal, wood, oil or gas to begin in latter part of June, announced May 14. (Release No. OPA-2500)

Equipment

Foundry Equipment Control. (WPB)—Controls on production and sale of foundry equipment and electric metal-melting furnaces established by Gen. Pref. Order E-11, issued April 23. *(Release No. WPB-3304)*

Frozen Schedule Rule. (WPB)—Producers prohibited from interfering with any frozen production or delivery schedule by changing precedence of purchase orders listed for production and delivery, under Priorities Reg. 18, issued May 13. Rule holds unless specifically authorized by amendment of frozen schedule or Special Directives such as on synthetic rubber, etc., and affects production or delivery schedules under 22 orders, including E-11 Foundry equipment and electric metal melting furnaces, M-211 heat treatment equipment, M-225 overhead traveling cranes. *(Release No. WPB-3520)*

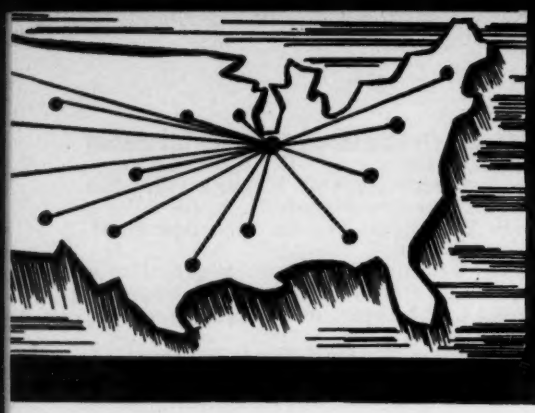
Revoke Foundry Order. (WPB)—Supplementary Order P-31-a, applying to foundry equipment, revoked May 7. *(Release No. WPB-3464)*

Patterns

Hardwood Lumber Prices. (OPA) Provisions permitting sellers of hardwood lumber to add actual costs of custom kiln-drying and milling to mill ceiling prices, announced in MPR 97 by Amend. 4, eff. April 29. *(Release No. OPA-2325)*

Miscellaneous

Absenteeism Guide Book. (WPB)—A guidebook defining absenteeism, describing causes and suggesting remedies has been issued to Labor-Management War Production Drive Committees in more than 2,000 war plants. *(Release No. WPB-3367)*



Chapter Activities

E. Canada and Newfoundland Elects Officers, Directors

By A. E. Cartwright,* Montreal

THE annual meeting of the Eastern Canada and Newfoundland Chapter, held April 16 at the Mount Royal Hotel, Montreal, marked the final get-together of the 1942-43 season. Retiring Chapter Chairman C. C. Brisbois, Robert Mitchell & Co., Ltd., reviewed the progress of the "baby chapter," youngest of A.F.A. chapters, in its initial season, and thanked the various companies who have given it aid and encouragement. He also warmly thanked the members for their loyal support.

Membership Committee Chairman E. M. Delahunt, Warden King, Ltd., Montreal, presented a report showing total membership of 177 for the first season. He stated that this fine showing represented enthusiastic efforts by all directors and many members, and paid special tribute to Chairman Brisbois for this achievement. The financial report was submitted by R. E. Cameron in the absence of Secretary A. R. Webster, Webster & Sons, Ltd., Montreal, and G. E. Tait, Dominion Engineering Works, Ltd., Lachine, Que., reported as chairman of the Papers Committee.

Election of Officers

When the slate of new officers and directors for the coming year was presented, it was accepted unanimously, the following being elected:

Chairman, M. L. Doelman, Electric Steels Ltd., Cap de la Madeleine, Que.; *Vice-Chairman*, E. M. Delahunt, Warden King, Ltd.; *Secretary-Treasurer*, A. R. Webster (re-elected), Webster & Sons, Ltd.; *Directors*—(3-year terms) W. E. Baxter, Crane Ltd., Montreal; A. E. Cartwright, Robert Mitchell Co., Ltd.; C. V. Hacker, Hull Iron & Steel Foundries, Ltd., Hull, Que.; A. R. Woods, Canadian Foundry & Equipment, Ltd., Montreal; (2-year term) P. R. Dauncey, Canadian Ingersoll-Rand Co., Ltd., Sherbrooke, Que.

Technical speaker of the evening was C. A. Sanders, American Colloid Co., Chicago, on "The Prevention of Casting Defects Due to Sand." Mr. Sanders used slides to present the distinctive qualities of three different types of bonding clays, Western bentonite, Southern bentonite, and fireclay. Cracked castings, he stated, are attributed to too high hot strength in molds, and means of overcoming this defect were described, through proper selection of the bonding agent to give adequate green strength and permeability while providing collapsibility in the hot short range during solidification of alloys.

Some striking results of tests made to determine the heat penetration through sand molds were shown by the speaker. Heating of the sand was demonstrated as being rapidly dissipated as the distance from the metal surface increases.

Officers and directors (top) and members of the Eastern Canada and Newfoundland Chapter at their annual meeting, held April 16 in Montreal. In the top photo, at left, is Secretary-Treasurer A. R. Webster, Webster & Sons, Ltd.; center, Honorary Chairman R. W. Bartram, Robert W. Bartram, Ltd.; right from center—Chapter Chairman C. C. Brisbois, Robert Mitchell Co., Ltd.; M. L. Doelman, Electric Steels, Ltd., newly elected Chairman; and E. M. Delahunt, Warden King, Ltd., elected vice-chairman.

Photo by Jack Blume, News Pictures

*Robert Mitchell & Co., Ltd., reporting for the Eastern Canada-Newfoundland Chapter of A.F.A.

Strong Chapter Built in Eastern Canada

IN THE April issue of *"American Foundryman"* the photo of R. W. Bartram, Robert W. Bartram, Ltd., Montreal, was inadvertently captioned as "Chairman" of the Eastern Canada & Newfoundland Chapter. Instead, Mr. Bartram is Honorary Chairman of this youngest of A.F.A. chapters.

C. C. Brisbois, Robert Mitchell Co., Ltd., Montreal, was elected the first Chairman of the Eastern Canada & Newfoundland Chapter, and has served in that capacity faithfully and efficiently for the past year. During the term of his leadership the chapter's membership has grown from approximately 50 to nearly 200 . . . a truly remarkable record.

In justice to Mr. Brisbois and those silent helpers who have worked with him, A.F.A. takes pleasure in correcting this error. Development of this new Canadian chapter, after nearly three years of war, required a tremendous lot of hard work and involved even a language difficulty. The valuable and limited time which Chairman Brisbois and his co-workers have devoted to their chapter have indeed placed it on a firm foundation in its first year.

It is to men like Mr. Brisbois, building for the advancement of the foundry product, that the entire industry owes a debt of thanks. His efforts on behalf of the Canadian chapter are now being carried on by the recently elected Chapter Chairman, M. L. Doelman of Electric Steels, Ltd., Cap de la Madeleine, Quebec, who served the chapter during 1942-43 as Vice-Chairman.

W. New York Chapter Talks Refractories

By J. Ralph Turner,* Buffalo, N. Y.

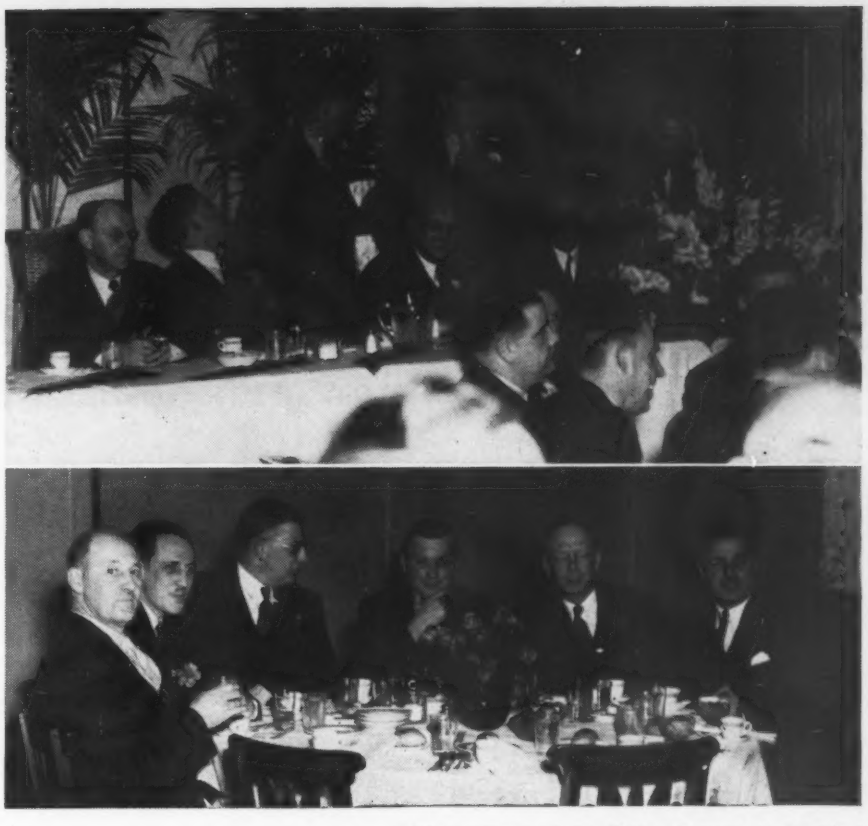
WITH 60 members and guests attending, the Western New York Chapter of the Association held its regular monthly meeting May 7 at the Hotel Touraine, Buffalo, N. Y. Vice-Chairman Frank E. Bates, Worthing Pump & Machinery Corp., Buffalo, presided at the request of Chapter Chairman R. T. Rycroft, Jewell Alloy & Malleable Co., Inc., Buffalo.

The evening's guest speaker was J. M. Smith, Carborundum Co., Perth Amboy, N. J., on the subject "Super-Refractories Through the Microscope," an interesting talk illustrated with films. One film, in Kodachrome, showed thin sections of refractories seen under the polarizing microscope, the other film shown having been made with the aid of a thermal microscope and illustrating the resistance of various refractories.

Mr. Smith traced the history of the refractories industry since 1920, and described numerous applications of super-refractories in the foundry industry, including slag-hole blocks, linings for non-ferrous furnaces, roofs for electric furnaces, etc. Super-refractories, he stated, including silicon carbide, fused alumina and mullite, are manufactured in electric furnaces and have a softening point ranging upward from 3200° Fahrenheit.

Following Mr. Smith's talk, the interesting film "Unfinished Rainbows" was shown through courtesy of the Aluminum Co. of America, telling the story of aluminum progress up to the present day.

*Queen City Sand & Supply Co., and Acting Secretary, Western New York Chapter of A.F.A.



Photos courtesy E. P. Meade, Sargent & Greenleaf

A few personalities at the regular meeting of the Western New York Chapter of A.F.A., held February 6 in Rochester, N. Y., with a heavy attendance and two most unusual features, namely, a real steak dinner and an excellent floor show.

Quad City Hears C. F. Joseph on ArmaSteel

By H. L. Creps,† Moline, Ill.

THE Quad City Chapter of A.F.A. met at the Fort Armstrong Hotel, Rock Island, Ill., on April 19 with 57 members attending, Chapter Chairman Alex D. Matheson, French & Hecht, Inc., presiding.

Carl F. Joseph, Saginaw Malleable Iron Div. of General Motors Corp, Saginaw, Mich., recent A.F.A. gold medalist, was the guest speaker, discussing "ArmaSteel, Its Manufacture, Control and Application." Mr. Joseph explained that "ArmaSteel," a trade name, applies to a certain type of pearlitic malleable iron, large tonnages being

†Frank Foundries Corp., and Recording Secretary, Quad City Chapter.

poured at his company's plant for such ordnance work as machine gun parts.

He illustrated various castings made from the product showing savings in weight and machine man-hours, and outlined post-war possibilities. Other slides showed applications to the automotive and refrigeration fields. In many instances, Mr. Joseph stated, manufacturers are flame-hardening critical points of ArmaSteel castings for superior wearing qualities.

During the evening plans were made for the Annual Foundrymen's Picnic, to be held June 19.

Silicon Bronze Discussed by Roast at Birmingham Meeting

By H. B. McLaurine,* Birmingham, Ala.

HAROLD J. ROAST, Canadian Bronze Co., Ltd., Montreal, and national Director of A.F.A., was the principal guest speaker at the April 16 meeting of the Birmingham District Chapter, on the subject of "Silicon Bronze Castings." Long an active leader in non-ferrous metallurgy, Mr. Roast used slides to illustrate his talk, which proved a material aid to the non-ferrous foundrymen present.

D. P. Forbes, Gunite Foundries, Inc., Rockford, Ill., also spoke at the meeting, on the St. Louis Foundry Congress. Mr. Forbes stressed the tremendous growth of A.F.A. in recent years and stressed the lasting benefits to be derived from cooperative work among the foundrymen.

It was announced that the last regular meeting of the season would be held in May, at which time new officers and directors of the chapter would be elected. Nominations were presented for consideration by the members. Tribute was paid to retiring Chairman E. A. Thomas, Thomas Foundries, Inc., for his stewardship of the chapter, which has shown steady growth during the past year.

March Meeting

Education of men for the foundry industry was discussed at the March 19 meeting of the Birmingham chapter, with Fred G. Sefing, International Nickel Co., New York, the headline speaker. With his topic "Where Can Education Be Used in the Foundry?", Mr. Sefing, chairman of the A.F.A. Committee on Cooperation with Engineering Schools, stressed the importance of well-educated men who understand foundry problems as well as the engineering point of view. Such qualifications, he stated, are essential for intelligent application of the science on which foundry progress depends.

Mr. Sefing declared that the industry is ready for such improvement, and outlined the science and engineering accepted by the industry, the science now being applied but still progressing, and future engineering developments in foundry practice that are needed.

*Reporter for the Birmingham District Chapter of A.F.A.

Northeastern Ohio Elects New Leaders

By Edwin Bremer,† Cleveland

NEARLY 300 members and guests of the Northeastern Ohio Chapter of A.F.A. were present at its annual "Old Timers" night. More than 30 men who had served in the foundry industry for 40 years and more were guests of the chapter as well as some 20 apprentices who had submitted castings and patterns in the national apprentice contest held at St. Louis in April. Prizes won by those in the local contest were presented on behalf of the Associated Industries by J. J. Witenhafer, Lake City Malleable Co.; Walter Seebeck, Western Pattern Co., and James G. Goldie, Cleveland Trade School.

John H. Tressler, Hickman Williams & Co., retiring President of the chapter, announced that, since no further nominations had been received, the secretary be instructed to cast a unanimous ballot for new officers and directors named by the Nominating Committee. The following thus were elected:

James G. Goldie, *President;* Russell F. Lincoln, Osborn Mfg. Co., *Vice President;* F. R. Fleig, Smith Facing & Supply Co., *Treasurer;* J. M. Lathrop, *The Foundry, Secretary; Directors* (3-year terms)—J. P. Heisler, A. C. Williams Co., Ravenna, Ohio; H. C. Gollmar, Elyria Foundry Co., Elyria, Ohio; Bruce Aiken, Crucible Steel Casting Co.; H. F. Roberts, Williams & Co.; Henry Trenkamp, Ohio Foundry Co. Also, G. B. Carson, Case School of Applied Science, was elected for a 1-year term.

Following the various announcements, the members and guests relaxed to enjoy a fine floor show, and all present agreed that the officers and committees of the chapter should be congratulated for their efforts in providing such a fitting climax to a successful season.

†*The Foundry*, and Chairman of Publicity for the Northeastern Ohio Chapter.

Annual Elections of the Ontario Chapter

By G. L. White,** Tronto, Ont.

NEW officers and directors to serve during the year 1943-44 were elected recently by the Ontario Chapter of A.F.A., C. C. MacDonald, Frederic B. Stevens Co. of Canada, Ltd., Toronto, being elected *Chairman.* Robert Robertson, International Harvester Co. of Canada, Ltd., Hamilton, Ont., was elected *Vice-Chairman,* and *Secretary-Treasurer* G. L. White was re-elected to that office.

Newly elected *Directors,* to serve three years, included: J. Dalby, Canada Metal Co., Ltd., Toronto; G. O. Loach, Otis-Fenson Elevator Co., Hamilton, and T. Tafel, Standard Sanitary & Dominion Radiator Co., Toronto. L. B. Morris, Gurney Foundry, Ltd., Toronto, was elected *Director* to serve one year, filling the vacancy left by

**Westman Publications, Ltd., and Secretary-Treasurer of the Ontario Chapter.

resignation of T. Clough, Dominion Wheel & Foundries, Ltd. Retiring Chairman J. J. McFadyen, Galt Malleable Iron Co., Ltd., Galt, who has guided the chapter's destinies during the past year, will serve on the Board of Directors as the Immediate Past Chairman.

Philadelphia Chapter Holds Double Meeting

By Wm. S. Thomas,* Philadelphia

THE April meeting of the Philadelphia Chapter of the A.F.A. was held at the Engineers Club April 9, with an attendance of 150 members and guests. Two speakers gave interesting and enlightening talks.

Captain Carlson, U. S. Ordnance Department, Philadelphia District, had as his subject, "Battlenecks," and pointed out the work that has been done on the conservation of metals through changes in the design of vital war items. He explained the vast opportunities for men of industry to help in this great work, stating that it is necessary for us to apply all of our experience and ingenuity to find new ways and methods to increase our production and to save materials.

The present decentralized purchasing and supervision system, he said, in operation by the Ordnance Department, is the result of lessons we learned in World War No. 1, when it was necessary for industry to go to Washington in order to secure orders or help in securing materials, and with its vast amount of red tape it did so much to hinder necessary production at that time. Credit was given the present Army officials of the Ordnance Department who laid the ground work for this important and well operating department.

Technical speaker of the evening was John A. Sweeney, who was introduced by Technical Chairman John Spencer. Mr. Sweeney went into detail to point out what they have been able to accomplish in their plant which consists of a centrifugal cast pipe shop and jobbing gray iron and non-ferrous foundry. That safety and good housekeeping in the foundry actually pay dividends was proven by Mr. Sweeney when he gave production figures before and after their program of cleaning up. The system used is unique in a great many ways, and was described in detail.

From the discussion that followed Mr. Sweeney's talk, it is very evident that a good many foundrymen left the meeting with a sincere resolve to make an effort to put some part of the many suggestions which Mr. Sweeney pointed out into immediate practice.

*North Bros. Mfg. Co., and Chairman, Publicity Committee, Philadelphia Chapter.

New Officers Elected by St. Louis Chapter

By J. H. Williamson,† St. Louis

NEW officers and directors of the St. Louis District Chapter were elected at the chapter's regular monthly meeting, held April 8 at the De Soto Hotel, St. Louis, with Chairman C. B. Shanley, Semi-Steel Casting Co., presiding. The report of the nominating committee was submitted by Carl Morken, Carondelet Foundry Co., the following being elected:

Chairman, L. A. Kleber, General Steel Castings Corp., Granite City, Ill.; *Vice-Chairman,* E. Eugene Ballard, National Bearing Metals Co.; *Secretary-Treasurer,* J. H. Williamson (re-elected), M. A. Bell Co.; *Directors* (new), Roy A. Jacobsen, Carondelet Foundry Co.; John W. Kelin, Federated Metals Div. of American Smelting & Refining Co.; Harold Wiese, Midvale Mining & Mfg. Co.; Jos. D. Walsh, Scullin Steel Co.

Emil A. Goerger, City Pattern & Model Co., as chairman of the Apprentice Training Committee, reported on winners in the local contests, who competed in the National A.F.A. Apprentice Contests at the St. Louis Foundry Congress. Six contestants were entered, a 1st prize of $10,

†M. A. Bell Co., and Secretary-Treasurer of the St. Louis District Chapter.

Scenes at the speakers table and around the dining room of Hotel Seneca, Rochester, N. Y., at the highly successful February 6 meeting of the Western New York Chapter, in which members of the Central New York Chapter also participated. The program included talks by H. H. Judson, Gould Pumps, Inc., on "Non-Ferrous Castings," and by R. E. Kennedy, National Secretary of A.F.A., Chicago.

Photos courtesy E. P. Meade, Sargent & Greenleaf

2d prize of $7.50, and 3d prize of $5.00 being awarded. There were no molding contest entries.

Judges of the local apprentice contests were Carl G. Dabler, Jr., American Steel Foundries, E. St. Louis, Ill.; Fred Bergmann, American Pattern & Model Co., and Louis Maier, Missouri Pattern Works.

The technical program featured Harry W. Dietert, Harry W. Dietert Co., Detroit, who was introduced by Vice-Chairman L. A. Kleber. Mr. Dietert presented a most interesting illustrated talk on "The Behavior of Mold and Core Surfaces at Elevated Temperatures," with four reels of color motion pictures showing the reactions of core and mold surfaces. Lively discussion followed the showing of each reel.

Don Reese Speaks at New England Meeting

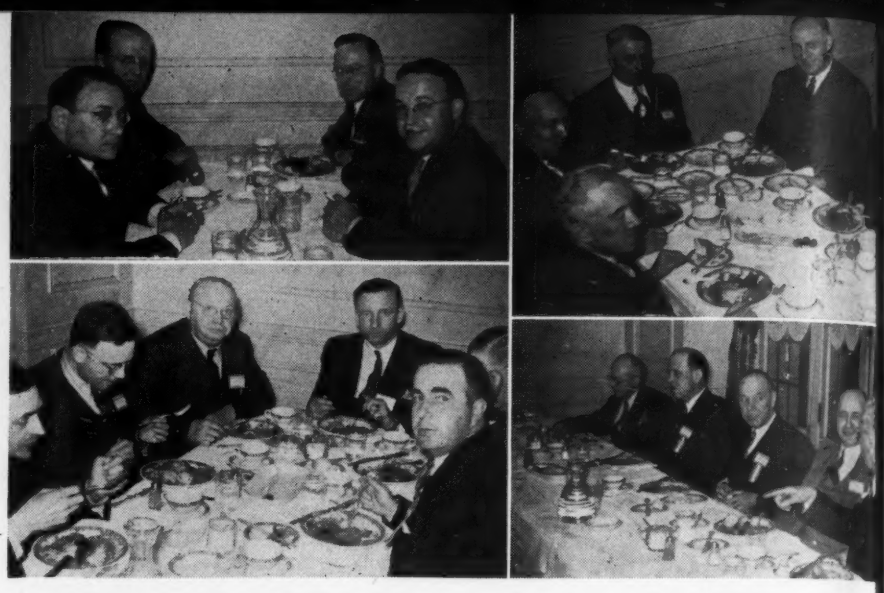
By M. A. Hosmer,* Boston

"CUPOLA Operations During War Time," attracted 110 members and guests to the April 14 meeting of the New England Foundrymen's Association, at the Engineers Club in Boston, with Donald J. Reese, International Nickel Co., and Metallurgical and Conservation Branch of WPB, the principal speaker. President A. W. Calder, New England Butt Co., Providence, R. I., presided.

Mr. Reese, a recognized authority on cupola operations, described the ideal cupola operator who would carry out the ideal cupola operation, employing at all times methods to produce quality product. A characteristic of the cupola, he said, is to try to saturate the metal melted with carbon, the amount of carbon pick-up being influenced by temperature in the furnace, time, chemistry or analysis of the iron, amount of excess carbon present, and physical nature of the charge. To control the resulting carbon, skillful handling of the metal process is necessary.

The ideal operator would weigh accurately all material, would use care in selecting materials so as to be properly sized for the capacity of the cupola, and would determine accurately the correct amount of coke for the bed and intermediate coke charges, seeing that weights are accurate at all times. Following the speaker's presentation, many information questions were asked by those attending.

*Hunt-Spiller Mfg. Co., and Report for New England Foundrymen's Association.



Some personalities at the Annual Dinner for A.F.A. Chapter Officers and Directors, held April 28 during the St. Louis Congress. Top Left (left to right)—E. H. King, Hill, & Griffith Co., Cincinnati, Vice-Chairman, Cincinnati District Chapter; Frank Hutchinson, Reliance Foundry Co., Cincinnati, Chairman, Cincinnati Chapter; E. A. Thomas, Thomas Foundries, Inc., Birmingham, Ala., Chairman of Birmingham District Chapter, and the Chapter's Secretary, Howard Nelson, Hill & Griffith Co., Birmingham.

Top Right (left to right)—C. C. Brisbois, Robert Mitchell Co., Ltd., Montreal, Canada, Chairman, Eastern Canada-Newfoundland Chapter; G. L. White, Westman Publications, Ltd., Toronto, Secretary-Treasurer of Ontario Chapter; J. J. McFadyen, Galt Malleable Iron Co., Ltd., Galt, Ont., Chairman of Ontario; C. C. MacDonald, Frederic B. Stevens of Canada, Ltd., Toronto, Vice-Chairman, Ontario; Emile Drolet, La Cie F. X. Drolet, Ltd., Quebec, Que., Director, Eastern Canada-Newfoundland.

Bottom Left (left to right)—R. H. Bancroft, Perfect Circle Co., New Castle, Ind., Vice-Chairman, Central Indiana Chapter; J. C. Jensen, Battle Creek Foundry Co., Battle Creek, Mich., Director, Western Michigan Chapter; C. J. Lonnee, Muskegon Piston Ring Co., Sparta, Mich., Chairman Western Michigan; I. R. Wagner, Electric Steel Castings Co., Indianapolis, Ind., Director, Central Indiana, and National Director of A.F.A.

Bottom Right (left to right)—J. C. Pendleton, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., Director of Chesapeake Chapter; C. B. Shanley, Semi-Steel Casting Co., St. Louis, Chairman of St. Louis District Chapter; L. C. Wilson, Reading Steel Casting Div., American Chain & Cable Co., Inc., Reading, Pa., newly elected President of A.F.A.; R. J. Teetor, Cadillac Malleable Iron Co., Cadillac, Mich., newly elected Vice-President of A.F.A.; R. E. Kennedy, National Secretary of the Association.

Women in Foundry Is Topic at Wisconsin

By H. E. Ladwig,† Milwaukee

THE important subject of "Women in the Foundry Industry" was discussed thoroughly at the April meeting of the Wisconsin Chapter, from two angles. The medical and health angle was considered by Dr. Paul Brehm, Supervisor of Wisconsin State Board of Health, reporting on a survey made of women in foundries. This report is reprinted in full in this issue of *"American Foundryman,"* beginning on page 13.

Dr. Brehm declared that "the wise foundry operator will prepare now with women," stating that those foundries who do not now employ them will have to hire them soon. His report showed that women now are holding down many types of foundry jobs, including chipping, oven tenders, grinders, molding, furnace operators, etc. Some jobs have been found unsuitable for them, such as sandblasting and annealing room work.

Dr. Brehm brought out clearly some special health and safety problems, such as rest rooms, physical examinations, rest periods, and safety shoes. These problems, he said, must be fully considered by the foundry operators.

Voyta Wrabetz, Chairman of the Wisconsin Industrial Commission, spoke of labor problems in connection with the employment of women in wartime. He stated that plants have been

†Allis-Chalmers Mfg. Co., and Secretary of the Wisconsin Chapter of the Association.

given special permission to work women after the 6:00 p.m. state deadline, with the one thought of increasing wartime production.

According to Mr. Wrabetz, giving one day's rest in seven days is of great importance in employing women. The speaker stated that employment of women in England for an average of 70 hours a week decreased their efficiency, but when they returned to a 48-hour week with sufficient rest periods their work increased.

Western Michigan Elects New Officers and Hears Paul Lane

By K. C. McCready,* Sparta, Mich.

WHEN the Western Michigan Chapter held its last meeting of the year, May 10, some 114 members and guests were present. New officers and directors to serve during the year 1943-44 were elected, H. C. BeMent, Campbell Wyant & Cannon Foundry Co., being chosen as *Chairman*.

Other officers and directors elected were as follows: *Vice-Chairman* (re-elected), A. E. Jacobson, Grand Haven Brass Co., Grand Haven, Mich.; *Secretary*, C. H. Cousineau, West Michigan Steel Foundry Co., Muskegon, Mich.; *Treasurer*, F. C. McCarthy, Wolverine Brass Co., Grand Rapids, Mich.; *Directors* (3-year term)—H. N. Meyers, Sealed Power Corp., Muskegon; R. W. Hathaway, Federal Mogul Co., Greenville, Mich.; H. J. Krause, Newaygo Engineering Co., Newaygo, Mich. In addition, retiring Chairman C. J. Lonnee, Muskegon Piston Ring Co., Sparta, was elected to serve one year as Director.

Paul S. Lane, Muskegon Piston Ring Co., presented an interesting talk on "Military Engines," describing briefly the many different types of engines used in this war and conditions under which they operate.

April Meeting

David Reeder, Electro-Metallurgical Co., presented a paper before 60 members and guests of the Western Michigan Chapter of A.F.A. at the April 12 meeting, held at Ferry Hotel, Grand Haven, Mich. Mr. Reeder's subject was "Acid Electric Furnace Practice," considerable discussion following his address.

Membership chairman, C. M. Clover, Clover Foundry Co., in his report announced that 22 new members from Campbell Wyant & Cannon Foundry Co., Muskegon, had just joined the chapter. George W. Bettes, of Sparta, showed some interesting movies of foreign lands.

*Muskegon Piston Ring Co., and Secretary, Western Michigan Chapter, American Foundrymen's Association.

Cent. Indiana Hears Crosby on Alloy Use

By R. A. Thompson,† Indianapolis, Ind.

THE final meeting of the season was held May 3 by the Central Indiana Chapter of the Association, at Washington Hotel, Indianapolis, with 75 members and guests present and Chapter Chairman B. P. Mulcahy, Citizens Gas & Coke Utility, presiding. During the technical part of the meeting H. H. Lurie, Cummins Engine Co., Columbus, Ind., presided.

V. A. Crosby, Climax Molybdenum Co., Detroit, was the speaker of the evening, discussing "Alloys in Cast Irons and Steels," a subject with which he has had long familiarity. Mr. Crosby showed the various results of alloys and combinations of alloys in irons and steels, and gave to the members many valuable pointers in the use of alloying materials. The long question and answer period that followed proved the chapter's interest.

†Electric Steel Castings Co., and Secretary of the Central Indiana Chapter.

N. California Pays Visit to Iron Works

By G. L. Kennard,** San Francisco

SOME 225 members and guests took advantage of the unique April 16 meeting of the Northern California Chapter, a plant visitation trip to the Joshua Hendy Iron Works plant at Sunnyvale, Calif. Dinner was served at the plant, with a musical program provided by the Hendy officials.

Chas. E. Moore, president, Joshua Hendy Iron Works, welcomed the visiting foundrymen and offered the services of his company in aiding any other foundry represented in war pro-

**Northern California Foundrymen's Institute, and Secretary-Treasurer of the Northern California Chapter of A.F.A.

Prominent members of the Northern California Chapter of A.F.A. and officials of the Joshua Hendy Iron Works, when the chapter held its plant visitation meeting at the Hendy works at Sunnyvale, Calif., April 16. Seated, left to right: Serge P. Kovaleff, Enterprise Engine & Foundry Co., San Francisco, chairman of the chapter Program Committee; Chas. E. Moore, president, Joshua Hendy Iron Works; Fred A. Mainzer, Pacific Brass Foundry of San Francisco, chapter Chairman. Standing, left to right—A. R. Linn, manager of industrial relations for the Hendy firm; Geo. L. Kennard, Northern California Foundrymen's Institute, San Francisco, and Secretary of the A.F.A. chapter.

duction problems. Chapter President F. A. Mainzer, Pacific Brass Foundry of San Francisco, expressed the thanks of the chapter for the invitation to visit the plant.

The entire assemblage then toured the plant, escorted by M. C. Gunetti, plant manager; J. B. Bubb, foundry division manager, and A. R. Linn, manager of industrial relations. Especially interesting were the large engine and turbine shops, as well as the company's extensive foundry layout.

Metropolitan Elects Its 1943-44 Officers

By R. E. Ward,* Bendix, N. J.

THE Metropolitan Chapter wound up the current season with a fine lecture on "Making Castings Sound," presented by G. H. Blackburn, Walworth Company, Greensburg, Pa. A. MacIntosh, Wright Aeronautical Corp., presided as Technical Chairman, the meeting being held May 3 at the Essex House, Newark, N. J.

Secretary K. DeLonge, International Nickel Co., offered in nomination a slate of officers for the 1943-44 season, and no other nominations being made, Chairman F. G. Sefing, International Nickel Co., directed the Secretary to cast a unanimous ballot for the following:

Chairman, J. W. Reid, R. Hoe & Co., Dunellen, N. J.; *Vice-Chairman,* T. D. Parker, Climax Molybdenum Co., New York; *Secretary,* F. Foxall, Eclipse Foundry Div., Bendix Aviation Corp.; *Treasurer,* H. B. Caldwell, Whiting Corp., New York.

New members elected to the Board of Directors for the term expiring in 1945 are: H. L. Ullrich, Sacks-Barlow Foundries, Inc., Newark, N. J.; K. V. Wheeler, American Steel Castings Co., Newark, N. J.; J. A. Bukowski, Worthington Pump & Machinery Corp., Bloomfield, N. J.; W. D. Schoonmaker, General Bronze Corp., Long Island, N. Y.; H. C. Seidel, Penn-Rillton Co., New York, and for the expired term of J. W. Reid, W. A. Kellogg of National Engineering Co., Maplewood, N. J.

H. C. Seidel, Chairman of the Past-Chairman Token Committee, then presented D. J. Reese, International Nickel Company; R. J. Allen, Worthington Pump & Machinery Corp.; W. E. Day, Mack Mfg. Co.; N. E. Woldman, Eclipse Aviation Div. of Bendix Aviation Corp., and retiring Chairman Fred Sefing, with attractive fountain pens in recognition of the excellent work they have performed as Past-Chairmen of the Metropolitan Chapter. Secretary DeLonge was also presented with a pen in appreciation for his services as Secretary for the past two years.

Technical Chairman A. MacIntosh, Wright Aeronautical Corp., then read an exchange paper by W. Gladwell, Mallory Metallurgical Products Corp., England, on "The Use of Radiography in Foundry Practice," submitted to the Chapter in exchange for W. G. Reichert's paper which was read at the Metropolitan Chapter's April meeting and submitted to the Institute of British Foundrymen. Mr. Gladwell's paper reviewed general British practice for detecting and remedying imperfections usually found in sand castings, and cited many interesting examples.

Mr. Blackburn then presented his paper, discussing the advantages and disadvantages of x-ray and gamma-ray inspection and their applications. He pointed out that gamma-ray inspection of pressure castings could be accomplished very readily, especially in the case of large ferrous castings.

*Eclipse Aviation Div., Bendix Aviation Corp., and Publicity Chairman, Metropolitan.

"Home Towners' Nite" at Southern California

By E. M. Hagener,† Los Angeles

THE March meeting of the Southern California Chapter of A.F.A. was held March 18 at the Los Angeles Elks Club, presided over by Chapter Chairman Earl Anderson, Enterprise Iron Works. Vice-Chairman Walter F. Haggman, Foundry Specialties Co., handled the evening's program as program chairman.

The evening was given over to a "Home Towner's Night," all speakers being from the local territory and covering numerous phases of foundry practice. Ed Green of Axelson Mfg. Co., gave a short talk on "Heat Treatment." Richard Hughes, Pacific Metals Co., spoke on "Grinding Wheels"; Wm. Emmett, Los Angeles Steel Casting Co., on "Core Ovens," and John Wilson, Climax Molybdenum Co., on "Ladle Additions." After each talk the meeting was thrown open for discussion.

An interesting motion picture on "Heat Treat Hints," was shown through courtesy of Lindberg Engineering Co.

A nominating committee was appointed for submission of nominees for new officers and directors for the coming year, the committee comprising Earl Anderson, B. G. Emmett, Robert Gregg, Earl Shomaker, Bert Popperwell, A. Rau and E. Sechrist.

†General Metals Corp., and Secretary of the Southern California Chapter.

Jack Cassel, Compton Metals, Los Angeles, receiving for his firm the 1st Prize trophy in the American Foundrymen's Association's Bowling Leagues, sponsored by the Southern California Chapter. The trophy, a large bowling pin mounted on crossed rammers, went to Compton Metals as the 1942-43 champions. All players in the leagues must be A.F.A. members or employed by A.F.A. member firms.

C. E. Bales New Head of Ceramic Society

C. E. BALES, vice-president of Ironton Fire Brick Co., Ironton, Ohio, was elected president of the American Ceramic Society at their 45th annual meeting held in Pittsburgh, April 19. Mr. Bales has been a member of American Foundrymen's Association since 1934, and today serves as vice-chairman of the A.F.A. Refractories Committee. He has long been active in refractories developments in the foundry industry.

Abstracts

NOTE: The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, photostat copies may be obtained from the Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

Aluminum

AIRCRAFT CYLINDER HEADS. *"Aluminum Cylinder Heads for Aircraft Engines,"* G. Eldridge Stedman, *Steel,* vol. 112, No. 15, April 12, 1943, pp. 102-105. Continued in vol. 112, No. 16, April 19, 1943, pp. 114-116. The author relates how the Servel aluminum foundry at Evansville, Ind., came to produce aluminum aircraft cylinder heads, and describes their production methods which result in a low scrap percentage.

CASTINGS DESIGN. *"Recommended Dimensions for Aluminum Castings," Product Engineering,* vol. 14, No. 4, April, 1943, pp. 234-235. Two pages of drawings illustrate the approved methods of joining aluminum walls and riles; dimensions for beading on cored holes, sleeves, and riles; preferred methods of blending metal around bolt bosses; flange and bolt hole proportions; methods of locking taper studs; methods of assembling aluminum sheet flush with casting surface; and methods of closing core support holes.

ALUMINUM MELTING. *"Induction Furnace for Melting Aluminum Alloys,"* Manuel Tama, *Metals and Alloys,* vol. 17, No. 2, February, 1943, pp. 326-329. The author describes the construction of an induction furnace which has been designed for melting light weight alloys, and points out the advantages of the absence of hydrogen in the furnace atmosphere, and the automatic stirring of the metal which results from electromagnetic forces. He also discusses the production rate of the furnace and methods of slag removal. Since the first induction furnaces for melting light alloys were developed for rolling and extrusion mills, furnaces of large capacity are available. The use of small induction units for melting can eliminate the holding furnace as an intermediate container between the reverberatory furnace and the ladle.

MELTING EQUIPMENT. *"Portable Furnace and Ladle for Light Alloys," The Iron Age,* vol. 151, No. 15, April 15, 1943, p. 49. A portable combination furnace-and-ladle, fired by a removable oil burner, has been found convenient for aluminum melting. Its use permits pouring direct from the furnace into the mold, reduces the amount of superheating necessary, and eliminates the need for a ladle or crucible and attendant preheating problems.

RADIOGRAPHY. *(See Radiography.)*

Antimony Bronze

(See Brass and Bronze.)

Boron

STEEL ALLOYING. *(See Steel.)*

Brass and Bronze

ANTIMONY BRONZE. *"Antimony Bronze,"* Harold J. Roast, *Canadian Metals and Metallurgical Industries,* vol. 6, No. 4, April, 1943, pp. 34, 36. The author has described the early work on antimony bronzes, hoping to stimulate further study of the alloys. Alloys described contain 16, 10, 8, 7, and 1.5 per cent antimony. The author gives the physical properties obtained on the foregoing alloys and includes photomicrographs of 8 and 7 per cent antimony bronzes.

PRESSURE CASTINGS. *"Pressure Castings," Canadian Metals and Metallurgical Industries,* vol. 6, No. 4, April, 1943, pp.31-32. This article describes the expanded equipment and personnel now used by Ottawa Car and Aircraft, Ltd., in the production of non-ferrous wartime castings. A description of the production methods for silicon-bronze pressure castings is included.

Cast Iron

MOLD DRYING. *"Dries Molds in Continuous Oven,"* Pat Dwyer, *The Foundry,* vol. 71, No. 2, February, 1943, pp. 88-91, 160-162. The author briefly lists the advantages of drying molds and describes the progression of operations through the foundry of the Kaukauna Machine Corporation, Kaukauna, Wis. Operations described include molding, skin drying and cooling of molds in a continuous oven, core baking, cupola melting, pouring and shaking out of castings, sand reconditioning and return to the molding stations, and hydroblast cleaning of castings.

UTILIZING BORINGS. *"Cupola Melting of Loose Cast Iron Borings,"* S. L. Feduska, *Metals and Alloys,* vol. 17, No. 2, February, 1943, pp. 316-319. The author has described a method whereby the average foundry can utilize iron borings in the cupola by charging the borings directly, rather than briquetting them prior to charging. This eliminates the expense of briquetting installations, and enables the foundry to retain large amounts of alloying elements which are ordinarily lost in boring disposal. Tests were run with varying charge sizes, wind box pressures, and stock heights to determine whether borings could be melted without going "up the stack," how larger and larger amounts of borings could be melted, and how the melting rate could be improved. The best melting practice developed resulted in a metal loss of only 5 per cent. More slag was formed than when larger scrap was charged, but the slag was of a lower density and more fluid. The author describes the best melting practice and also the practice for direct cupola melting of borings which has been in use in England during the past 4 years. He suggests possible variations in the procedure, compares the cost of iron melted from borings with iron melted from ordinary scrap and pig iron, and describes the possibility of producing synthetic steel scrap from borings melted in a cupola at a cost below the market purchase price of steel scrap.

Centrifugal Casting

SOLIDIFICATION. *"Centrifugal Casting,"* Nathan Janco, *The Iron Age,* vol. 151, No. 16, April 22, 1943, pp. 51-54. Centrifugal methods are used to produce three types of castings—true centrifugal castings, semi-centrifugal castings, and pressure castings. A true centrifugal casting is a cylindrical shaped casting made in a mold which is spun about the axis of the casting. This axis may be oriented either horizontally or vertically. A semi-centrifugal casting is not necessarily cylindrical in shape, but is made in a mold which is spun about the axis of the casting. A pressure casting is a casting of any shape, made in a mold which is spun about an axis, outside of the casting. In all three types of castings, solidification must progress from points farthest removed from the spinning axis to the points nearest the spinning axis. Directional solidification in centrifugal castings occurs naturally. The use of pads, auxiliary gates or chills may be necessary to secure directional solidification in semi-centrifugal castings. In pressure casting, the down gate and side gates not only conduct the metal to the mold cavities, but also feed the castings during solidification.

STEEL. *(See Steel.)*

Chemical Analysis

BORON. *(See Steel.)*

Cores

MAGNESIUM CASTINGS. *(See Magnesium.)*

Cupola Operation

UTILIZING BORINGS. *(See Cast Iron.)*

Cylinder Heads

AIRCRAFT. *(See Aluminum.)*

Design

ALUMINUM CASTINGS. *(See Aluminum.)*

Furnaces

ALUMINUM MELTING. *(See Aluminum.)*

Inspection

ORDNANCE CASTINGS. *"Ordnance Inspection of Castings,"* A. C. Richmond, *The Iron Age,* vol. 151, No. 16, April 22, 1943, pp. 41-44. Ordnance inspectors provide an additional check on castings passed by the foundry's own inspectors. Foundry inspectors, who are accustomed to examin-

ing peacetime castings, frequently pass minor defects which assume major importance when they occur in ordnance castings. Knowledge that all castings will receive a final inspection from an outside source stimulates the entire foundry personnel to do more careful work. Ordnance inspection will serve as a reducer of production costs, provided the foundry immediately determines and eliminates the cause of defects which result in casting rejections. The foundry should rigidly adhere to specifications in producing ordnance castings and the test bars which must accompany them.

RADIOGRAPHY. *"Limitations of Radiography as an Inspection Method,"* Vernon I. E. Wiegand, *Metal Progress,* vol. 43, No. 2, February, 1943, pp. 229-232. In this article the author has outlined the information presented at Panel Discussions on War Production at the A.S.M. convention. Information presented includes specific limitations of radiography, proper and improper applications of radiography, and specific examples of proper applications. Characteristics of the part or material being X-rayed, characteristics of the X-ray equipment, characteristics of film emulsions, processing technique, and interpretation of films limit the application of radiography as an inspection method. Proper applications of radiography are quality control on foundry practice, inspection of welds, rejection of defective castings before machining, checking in designing a part, inspection of parts which have very important or critical uses, and inspection of material to determine the effects of time and use. Improper applications of radiography are interpreting films without comparing the results of correlated tests and data, drawing conclusions concerning an entire heat by studying insufficient numbers of films or radiographs of parts which are not truly representative of the entire heat, X-raying unimportant parts, and X-raying parts when a cheaper method of inspection would be equally satisfactory. The author lists specific examples of proper application which he has classified as inspection of finished products, inspection of joints, locating position of metal inserts, measuring concealed objects, determining the location and size of concealed structures, and determining kind of materials and their distribution.

RADIOGRAPHIC. *(See Magnesium.)*

RADIOGRAPHY. *(See Radiography.)*

RADIOGRAPHIC SYMBOLS. *(See Radiography.)*

STEREO-RADIOGRAPHY. *(See Radiography.)*

Magnesium

CORES. *"Cores for Magnesium Castings,"* N. M. Briskin and George Walker, *The Foundry,* vol. 71, No. 4, April, 1943, pp. 140-141, 227-231. Sand cores for magnesium castings must have special properties to accommodate those characteristics peculiar to magnesium alloys, in addition to the basic properties required in cores for all metals. Lower strength at high temperatures is necessary, especially in cores nearly surrounded by metal, to compensate for the high shrinkage of magnesium alloys. High green strength is necessary so that the unbaked cores can support the weight of the numerous cast iron chills used to counteract the effects of high shrinkage. Special provisions for core knockout must be made, for the low heat content of magnesium is insufficient to effect disintegration at pouring temperatures. Some foundries complete their heat treating operations prior to removing cores in order to burn out the core binders and permit disintegration. However, this low heat content results in a freedom from sintering and permits sand reclamation. Chaplets cannot be used to support cores, for the heat content of magnesium alloys is not sufficient to fuse them with the molten metal. The low specific gravity of magnesium alloys reduces the tendency of cores to float, and results in less weight to be supported by cores. However, the same property makes high core permeability essential, for excess gas pressure causes blow holes to form in the casting. Inhibitors must be incorporated in the sand mix or sprayed on the core surface to prevent oxidation and sand attack. Sulphur and boric acid are frequently mixed with the core sand. Fluoride inhibitors are sprayed on core surfaces. Cores must be hard enough to prevent crumbling or spalling caused by handling, for most parts cast from magnesium alloys require high dimensional accuracy. The essential properties for magnesium casting cores may be obtained through use of suitable core mix materials.

METALLOGRAPHY. *"The Metallography of Magnesium Alloys,"* J. B. Hess and P. F. George, *The Metal Industry,* (London), vol. 62, No. 8, February 19, 1943, pp. 114-116. The soft matrix metal and relatively hard microconstituents of magnesium alloys make them susceptible to objectionable relief polishing. Since scratches are easily removed during the coarse grinding stages, care must be taken to sufficiently prolong each step to insure removal of distorted metal. Specimens may be macro-etched from 2 to 10 minutes in a 10 per cent solution of either acetic or tartaric acid. Less polish is needed for macro than for micro-etching. After etching, the surface is swabbed and then dried. If the reaction products aid in showing structure, they should be allowed to remain on the specimen. From 2 to 3 minutes total immersion in 10 to 25 per cent acetic acid will give a deep etch. Metal in the "as-cast" condition is best micro-etched in "glycol etchant." Metal in the solution heat-treated condition may be micro-etched in either 10 per cent tartaric acid or "acetic-glycol" etchant. "Phospho-picral" etchant is useful in estimating the amounts of undissolved compound in solution heat-treated metal, for it darkens the solid solution areas and leaves other phases white. Aluminum occurs in magnesium alloys in both solid solution and intermettalic phases. The Beta (Mg-A1) phase in its primary form is white and in slight relief from polishing. Etching outlines but does not attack the constituent. The Beta (Mg-A1) phase precipitates from solid solution in a lamellar form. In binary Mg-Zn alloys, zinc forms an intermettalic compound which looks like Beta (Mg-A1). In Mg-A1-Zn alloys, zinc occurs only in solid solution. Manganese appears as angular, bluish-gray crystals which stand in relief from polishing, and may be surrounded by circle pits caused by polishing. Tin occurs either as Mg2Sn or dissolved pearance to manganese, but more watery in color and more angular in shape. Cadmium always exists in solid solution. Silicon occurs as Mg2Si, similar in ap- in the Alpha (Mg) phase.

RADIOGRAPHIC INSPECTION. *"Radiographic Examination of Magnesium Radiography,"* Roger G. Cron, *Industrial Radiography,* vol. 1, No. 3, January, 1943, pp. 13-16. The use of low voltages, short exposures, and small focal spot tubes, coupled with the predominance of light sections, makes it possible to secure high contrast and good definition in radiographs of magnesium castings. It is important that density and contrast should be not only good, but also consistent at all times. Uniform density and contrast enable the reader to judge whether the degree of microshrinkage present in a casting justifies its rejection. Close control of the developer is essential to maintaining uniform density. A convenient way to check the degree of exhaustion is by comparing radiographs of a step bar made with identical exposures. A coarse-grained structure is revealed by a mottled appearance of the radiograph. Cold sheets and oxide skins are somewhat difficult to show. Gross defects, such as blows and shrinkage cavities, are readily detected. Failure to remove core wires is readily disclosed by radiographs. The number of castings from any one lot which should be X-rayed depends upon how consistently the quality of castings is maintained, rather than on the particular quality. Defects should be discovered, but it is even more important that their cause should be determined. Defects in an individual casting should not constitute grounds for rejection of an entire lot. The first casting of a heat might exhibit excessive microshrinkage as the result of too much superheat, whereas the last casting poured from the same heat might contain a misrun caused by too low temperature. The determining factor for the rejection of an entire lot should be the production technique of the lot.

SURFACE PROTECTION. *"Surface Protection of Magnesium,"* S. H. Barmasel, *The Iron Age,* vol. 151, No. 16, April 22, 1943, pp. 44A-44D. Four essential steps in the application of protective coatings to magnesium parts are: Surface cleaning, chemical surface treatment, priming, and painting. Surface cleaning is usually alkaline cleaning, using either boiling or an electrolytic process. This may be preceded by solvent cleaning if heavy films of oil or grease are present. Chemical treatments which may be applied to the surface are chrome-pickle, dichromate, galvanic anodizing, alkali-chromate, chrome-sulfate, and chrome alum treatments. The priming paint should have good adhesion, corrosion-inhibitive properties, and resistance to moisture penetration. Zinc chromate has better corrosion-inhibitive properties than other pigments. Resistance to moisture penetration is the most important property of finishing paints. The number of finishing coats needed depends upon service conditions. Best resistance to moisture penetration can be obtained with aluminum paint.

Melting Equipment

ALUMINUM ALLOYS. *(See Aluminum.)*

Metallography

MAGNESIUM ALLOYS. *(See Magnesium.)*

Molding

PRESSURE CASTINGS. *"Foundry Technique in Relation to Certain Pressure Castings,"* F. Dunleavy, *Foundry Trade Journal,* vol. 69, No. 1388, March 25, 1943, pp. 239-242, 244. The author describes, in great detail, the molding procedure used in producing three specific pressure castings—a high-pressure six-stage boiler feed pump casing,

a gun metal evaporator body, and a gray iron evaporator body. The feed pump casing was subjected to a hydraulic pressure of 1,000 p.s.i. The gun metal evaporator body was subjected to hydraulic pressures of 40 p.s.i. on the vapor box and 80 p.s.i. on the steam box. The gray iron evaporator withstood 220 p.s.i. hydraulic pressure at the vapor way and 480 p.s.i. at the steam way.

Non-Destructive Testing

STEREO-RADIOGRAPHY. *(See Inspection.)*

Non-Ferrous

SCRAP SEPARATION. *(See Scrap.)*

Ovens

MOLD DRYING. *(See Cast Iron.)*

Pressure Castings

SILICON BRONZE. *(See Brass and Bronze.)*

Radiography

INSPECTION. *"The Location of Flaws by Stereo-Radiography,"* James Rigbey, *The Metal Industry* (London), vol. 52, No. 10, March 5, 1943, pp. 152-153. The vertical position of flaws in metal parts may be mathematically determined from radiographs made by a "double exposure technique." The author derives a formula involving x-ray tube shift, focal distance, and shift of the flaw image. Placing a lead marker on top of the specimen and measuring the shift of its image will permit the use of a formula eliminating the tube shift and focal distance. The author describes the possible errors and estimates the accuracy of determinations.

INSPECTION SYMBOLS. *"Radiographic Symbols Used in Inspection of Navy Materials," Industrial Radiography,* January, 1943, pp. 29-31, 35. This article is a reprint of a preliminary draft of specifications issued by the Bureau of Ships, Navy Department, on August 1, 1942 as "General Specifications for Inspection of Material; Appendix II, Metals; Part F, Radiography; Section F-2, Radiographic Symbols."

LIGHT ALLOYS. *"Radiography of Light Alloys,"* Robert C. Woods and V. C. Cetrone, *Iron Age,* vol. 151, No. 12, March 25, 1943, pp. 52-58. The authors discuss the importance of voltage control, and the resultant wave length control, in producing radiographs of maximum contrast. The article is copiously illustrated with photographs of radiographs of step bars and spot welds, taken at varying voltages and with the use of copper, molybdenum, and tungsten tube targets.

MAGNESIUM CASTINGS. *(See Magnesium.)*

Scrap

NON-FERROUS. *"Magnetic Separation of Non-Ferrous Scrap," The Metal Industry* (London), vol. 62, No. 6, February 5, 1943, pp. 87-88. Contaminating ferrous material may be magnetically removed from three types of non-ferrous scrap: "Scrapyard" scrap which is only slightly contaminated, non-ferrous borings and turnings which contain only small amounts of ferrous scrap, and mechanically entangled ferrous and non-ferrous scrap. Scrapyard scrap is usually separated by a magnetic pulley installation. This can be made by replacing the head pulley of a belt conveyor with a magnetic pulley. Turnings and borings are separated by drum-type separators, dual-pulley type separators, or revolving disc separators. The drum-type separator consists of a drum which revolves about a magnetic coil. Magnetic lines of force extend only halfway around the drum. The scrap is fed on the top of the drum. Ferrous material is carried halfway around the drum, and is discharged when it reaches the end of the magnetized section. Dual-pulley type separators differ from the magnetic pulley type in that a second conveyor belt and magnetic pulley is used to increase the time of contact between ferrous scrap and the magnetized areas. Revolving disc separators consist of a magnetized disc, carrying secondary magnets mounted in the periphery, which revolves above an agitating tray to which the scrap is fed. The diameter of the disc is greater than the width of the tray. A primary magnet induces a magnetic field in the peripheral magnets while they are over the tray. When they have passed the tray, the magnetic field is lost and the ferrous material drops from the disc. Entangled scrap is separated by agitating separators. A series of alternate magnetic poles mounted above a conveyor belt passing over an agitating tray to which scrap is fed will cause ferrous scrap to jump from one pole to another, thus freeing it from entanglement. A magnetic drum mounted around a rotating series of alternate magnets will also agitate the scrap sufficiently to disentangle it.

Silicon Bronze

PRESSURE CASTINGS. *(See Brass and Bronze.)*

Steel

BORON DETERMINATION. *"Colorimetric Determination of Boron in Steel Using Quinalizarin Reaction,"* G. A. Rudolph and L. C. Flickinger, *Steel,* vol. 112, No. 14, April 5, 1943, pp. 114, 131, 149. The colorimetric determination of minute quantities of boron in steel accurately to plus or minus .0005 per cent may be made, utilizing the characteristic blue color formed by boron with quinalizarin (1, 2, 5, 8—Tetra-hydroxy-anthraquinone) in a medium of strong sulfuric acid. As little as .0002 per cent boron may be easily detected in either the soluble or insoluble part of the steel. Ordinary glassware is suitable for use in this determination. The authors describe the reagents, apparatus and procedure for this determination.

CENTRIFUGAL CASTING. *"Centrifugally Cast Steel,"* C. K. Donoho, *Iron Age,* vol. 151, No. 13, April 1, 1943, pp. 52-58. Centrifugal casting is adaptable to castings having a generally cylindrical shape and a bore through the center. Castings may be spun about either a vertical or horizontal axis. When spun about a horizontal axis, the bore is cylindrical in shape. When spun about a vertical axis, the bore is parabaloidal in shape. Centrifugal castings are sound, dense, and clean. The yield is high, cores are usually unnecessary, and inspection is simplified. The process is limited by the size and shape of the casting, installation and maintenance costs, and inflexibility of the equipment. Centrifugal casting is particularly suited for mass production of identical castings. Either metal or sand-lined molds may be used. Metal molds are used for large quantities of castings which have sufficiently simple containers so that the castings may be easily removed from the mold, and when a fast cooling rate is desired. Sand-lined molds are used where the metal must flow a long distance through the mold, when the mold must be broken up to permit casting removal, when the shape and dimensions of the casting must be varied, and when a uniform cooling rate throughout the wall is desired. In general, molds are spun at a speed which will give a centrifugal force of about 75 times gravity. The author describes the melting and molding practice used by his company.

Testing

BORON IN STEEL. *(See Steel.)*

Training

WOMEN. *"How to Train Women for War Production,"* Richard S. Schultz, *Supervision,* vol. 5, No. 3, March, 1943, pp. 14-15. A nation-wide survey of training and supervision of women workers indicates that plants hiring women should provide adequate work conditions, capitalize on their special abilities, and consider personalities and attitudes for rapid training and up-grading.

WOMEN. *"Women at Work in the Foundry,"* John H. Caldwell, *The Foundry,* vol. 71, No. 4, April, 1943, pp. 128-129, 210. Ten per cent of the present foundry crew of Bendix Aviation Corp. is women. The women are trained on the job, work with men on both light and heavy jobs, and work equally as well.

Women in Foundries

(See Training.)

June Chapter Meeting Schedule

June 9
New England Foundrymen's Assn.
Engineers' Club, Boston

✦ ✦

June 16
Cincinnati District
Hyde Park Golf and Country Club
ANNUAL STAG OUTING AND ELECTIONS

June 18
Northern California
St. Francis Hotel, San Francisco
PRESIDENT'S NIGHT & INSTALLATION OF OFFICERS

✦ ✦

June 19
Quad City
Farmall Club, Moline, Ill.
ANNUAL PICNIC

Western New York
ANNUAL ELECTIONS

✦ ✦

June
Philadelphia
ANNUAL OUTING

✦

St. Louis District
ANNUAL PICNIC

LAST YEAR'S BONDS GOT US STARTED

THIS YEAR'S BONDS

ARE TO WIN!

★ Last year saw nearly 30,000,000 workers voluntarily buying War Bonds through some 175,000 Pay-Roll Savings Plans. And buying these War Bonds at an average rate of practically 10% of their gross pay!

This year we've got to top *all* these figures—and top them handsomely! For the swiftly accelerated purchase of War Bonds is one of the greatest services we can render to our country . . . and to our own sons . . . and our neighbors' sons. Through the mounting purchase of War Bonds we forge a more potent weapon of victory, and build stronger bulwarks for the preservation of the American way of life.

"But there's a Pay-Roll Savings Plan already running in my plant."

Sure, there is—but how long is it since *you've* done anything about it? These plans won't run without winding, any more than your watch! Check up on it today. If it doesn't show substantially more than 10% of your plant's pay-roll going into War Bonds, it needs winding!

And you're the man to wind it! Organize a vigorous drive. In just 6 days, a large airplane manufacturer increased his plant's showing from 35% of employees and 2½% of pay-roll, to 98% of employees and 12% of pay-roll. A large West Coast shipyard keeps participation jacked up to 14% of pay-roll! You can do as well, or better.

By so doing, you help your nation, you help your workers, and you also help yourself. In plant after plant, the successful working out of a Pay-Roll Savings Plan has given labor and management a common interest and a common goal. Company spirit soars. Minor misunderstandings and disputes head downward, and production swings up.

War Bonds will help us win the war, and help close the inflationary gap. And they won't stop working when victory comes! On the contrary—they will furnish a reservoir of purchasing power to help American business re-establish itself in the markets of peace. *Remember, the bond charts of today are the sales curves of tomorrow!*

You've done your bit Now do your best!

THIS SPACE IS A CONTRIBUTION TO AMERICA'S ALL-OUT WAR EFFORT